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A COMPARATIVE STUDY OF ALTERNATIVE PLANS FOR VETERINARY MEDICAL EDUCATION AND SERVICES IN THE OLD WEST REGION

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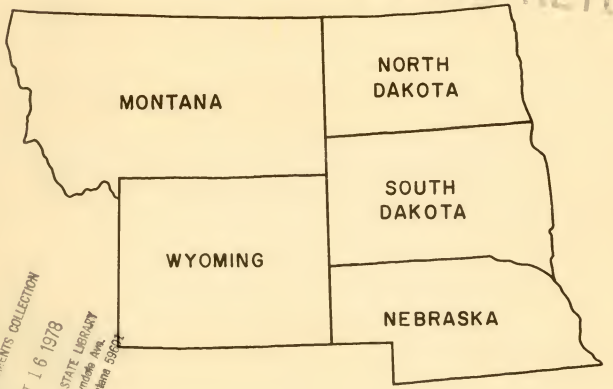

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September 15, 1977

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MODEL REFINEMENT STUDY:

A COMPARATIVE STUDY OF ALTERNATIVE PLANS

FOR

VETERINARY MEDICAL EDUCATION AND SERVICES

IN THE OLD WEST REGION

Prepared for:
THE OLD WEST REGIONAL COMMISSION

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and

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September 15, 1977

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History and Overview of Project

The Old West Regional Commission in its establishment was designed to help solve regional economic problems and stimulate orderly economic growth. Early in its operation the Commission concerned itself with veterinary medical needs of the Region (Montana, Nebraska, North Dakota, South Dakota, and Wyoming). These concerns dated back to 1973. The Commission identified at least five areas of concern which were reflected in the objectives of studies contracted for under direction of Dr. C.R. Cole:

1) A predictable opportunity for students of the Region (OWR) to be admitted to a college of veterinary medicine. The particular concern is that of a reasonable level of educational opportunities, recognizing that demand will exceed that of the actual opportunities.

2) The potential of retaining more practicing veterinarians to serve the livestock industry and the veterinary medical service needs of the Region.

3) Increase economic activity in the Region through more veterinarians practicing in the Region, reduced livestock disease and parasite losses, economic spinoff of the school's function, economic spinoff of the regional research of the school, and income that the students expend in the institutions as a gain retained in the Region. The Commission recognized that contracting resulted in all of

the regional dollars moving outside of the Region insofar as the investment in the students' programs from the state appropriation point of view and the expenditures of the students themselves were concerned.

4) Improved continuing education for practicing veterinarians.

5) Improved services to the Region's livestock industry.

From these major concerns the Commission initiated a two-phase study program under the direction of Dr. Clarence R. Cole, former dean of veterinary medicine, Ohio State University. These studies were carried out and reported in 1975.

Phase 1 of the study was entitled, "The Assessment of the Need for a College of Veterinary Medicine in the Old West Region." The report[1] was filed by Dr. Clarence Cole, April 15, 1975. The major findings of the study indicated that, based on a projected demand for veterinarians, the Old West Region would have a shortage as early at 1980. The projections made in the report were based upon an analysis using the factors of human population of the Region and farm and ranch cash receipts from livestock and livestock products. Based on national analyses, using these two factors, historically the total number of veterinarians practicing was predicted with 94.7% degree of accuracy. The predictions of the OWR based upon the information were as follows:

1975 -- 1,100 veterinarians

1980 -- 1,409 veterinarians

1985 -- 1,810 veterinarians

1990 -- 2,339 veterinarians

[1] Cole, C.R.; L.D. Knezek and V.B. Toren. Assessment of the Need for a College of Veterinary Medicine in the Old West Region. Old West Regional Commission, Rapid City, South Dakota 1975.

The study, in considering the percent of veterinarians residing in the Old West Region compared to that of the total U.S. veterinarians, noted a decline from 4.8% in 1955 to 3.7% in 1975.

Other findings considered the workload of the veterinarian in the Old West Region. Using an index of livestock receipts per veterinarian, the Old West Region has a ratio of 4.9 million dollars per veterinarian compared to a national average of 1.7 million dollars. The data further cited a workload survey related to hours of work per week, indicating veterinarians in the Old West Region serving 60 hours per week compared to a national average of 50 hours per week. A profile of the veterinarians within the Old West Region reveals that the majority were 30-50 years of age with an average of 14 years of practice. National veterinarian retirement figures indicate that the average age of retirement is 55 years.

The conclusions and recommendations of Phase 1 were that the Old West Region has an unequivocal need for a college of veterinary medicine, citing the projected shortages, compared to the number of students who are returning under present contract arrangements, of 254 practitioners by 1980; 573 by 1985; and 1,028 by 1990. It was further noted in the conclusions that there is a large supply of qualified students existing in the Region to satisfy admissions standards for a regional school. It is noted that the Old West Region is on a declining percent of admissions of the total U.S. base of students studying veterinary medicine. A recent release (July 1977) by the dean of veterinary medicine at the University of Illinois, Dr. Richard Dierks, cited that the prospects for admission to veterinary schools are dim for those students residing in states not having their own veterinary schools. This supports the conclusion of Dr. Cole's study indicating that the Region will have

greater difficulty placing students into veterinary medicine than in the past.

It is further concluded that the sheer scope of the livestock industry of the Region in itself justifies a college. A final conclusion is that long-range contracting is not the answer for the meeting the regional veterinary medical needs, citing the fact that present contracting is concelable within one-year's notice, or even less. Cole in his Phase 1 study recommended that a feasibility study be carried out to consider the establishment of a regional school with five-state participation with the interim situation depending upon expanding contracts.

Phase 2 of the Old West Regional Commission studies was reported in November, 1975, the study being entitled, "A Feasibility Study - Northern Plains College of Veterinary Medicine."[2] This study recommended a five-state model with participation by each of the five states (Montana, Nebraska, North Dakota, South Dakota, and Wyoming)having a program which would permit the first-year training to be carried out at each state; that in the second and third year, and part of the fourth, the student would study on a single campus, having a class capacity of 96 students per year; and that the last part of the fourth year would be spent in the home state in selected programs and externships. It was recommended that the single-campus location be the University of Nebraska-Lincoln.

The conclusions of the Phase 2 study were basically as follows:

That there would be an economic advantage in the cost of education of having a regional school over contracting, citing approximate cost of $7,800 in 1975 per student compared to a range of $8,500 to $11,679 under

[2]Cole, C.R. and V.B. Toran. Northern Plains College of Veterinary Medicine-A Feasibility Study. 1975.

contracting. It further cited a conclusion that there would be a program advantage of having a regional school, noting the curriculum would be controlled with regional orientation, and the clinical activity would be regionally oriented. The program advantage would also be obtained by admissions control, thereby providing a predictable base for class enrollment. It was also noted that a program advantage would be available through regionally oriented research as well as regionally oriented services. An administrative advantage was noted in the proposed model from the standpoint that there would be a five-state participation in the program. A final advantage was noted in regard to the establishment of the facilities themselves, noting that the regional school facilities would likely be partially financed through the Old West Region as well as HEW.

Following these two-phase studies of Dr. Cole, general circulation of the report occurred and the Commission in 1976 requested that an academic committee made up of persons from the land-grant institutions in the Old West Region be brought together to review the Cole studies. The concerns that were raised as a result of the academic committee review are as follows:

Were there to be expected economic savings in the Old West Region Model?

The concern was also identified that there may have been incomplete recognition of the five states' existing commitments to research and service. Too, there was incomplete recognition of the commitments for the present facilities of the five states that might be available for the regional school.

Another concern noted by the academic committee related to an

underestimation of costs of establishing and operating the program.

Following these discussions, the Commission in January 1977 authorized a project for the refinement for the model for regionalization of veterinary medical education needs and services. This project was initiated effective March 15, 1977 with a six-month duration with closing date September 15, 1977. Under the activities of the project the Commission established several levels of responsibility. The work of the contract was carried out by the project's Study Team chaired by Dr. E.O. Dickinson. The direction of the work on the project was carried out by the Study Team following instruction from the Academic Advisory Group chaired by Dr. T.E. Hartung. A third level of review of the project was carried out by a Legislative/ Academic Advisory Committee, appointed by the governors of the five states, and chaired by Senator Frank Shablow. The three groups are as follows:

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An overview of the project can be summarized as follows:

The objective of this study is to evaluate alternative models of regionalization and identify and refine viable models that are acceptable to most states in the Region.

Alternatives to be considered but not limited are:

1) to evaluate a modular or three-step approach with three to five states participating;
2) to evaluate the feasibility of establishing a new school in Nebraska with guaranteed contracting to the other four states;
3) to compare and update the Cole study to the present study; and
4) to evaluate guaranteed contractual agreements with established schools.

The Study Team has met on a frequent basis throughout the period of the contract with the Academic Advisory Group meeting on three occasions with the Study Team. The report as it appears in this compilation is a result of the review of the Academic Advisory Group working with the Study Team in fulfilling the objectives of the Old West Regional grant.

Existing Programs of Veterinary Medicine in the United States

At the present time, there are 19 programs of veterinary medical education in the United States that offer the full professional curriculum. Those programs are generally located in the eastern and midwestern sections of the country. Seventeen of the programs are associated with state land-grant universities and two are affiliated with private institutions (University of Pennsylvania and Tuskegee Institute).

Several new programs for veterinary medicine are in development. Five states in the southeastern section of the United States are in various stages of progress in the development of single state schools of veterinary medicine. Florida, Mississippi, and Tennessee have progressed to the point that the first classes have been admitted. The states of North Carolina and Virginia have appropriated funds and initiated formal planning of their programs.

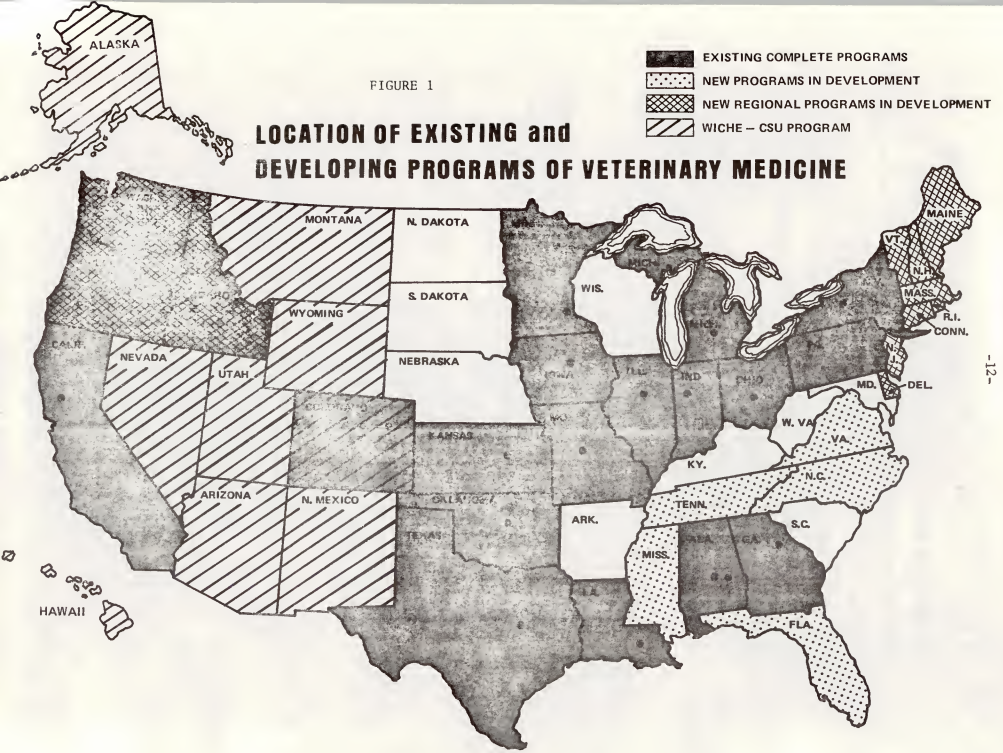
Two regional plans are also in development. In the northwestern section of the country, the states of Washington, Oregon and Idaho have initiated a regional affiliation for veterinary medicine programs. That project was developed by expansion of an existing College of Veterinary Medicine at Washington State University with active participation and delivery of certain portions of the curriculum by the other two participating states. A second regional program is in the formal planning stages in the New England area. Proposals for that plan provide for the establishment of a new school of veterinary medicine at Tufts University in Boston, Massachusetts with satellite facilities in the other participating states of the region.

Colorado State University has recently expanded its veterinary program to include increased educational opportunity for residents of certain states in the western section of the United States. That program is allied with the Western Interstate Commission for Higher Education (WICHE). Those included in the WICHE compact are the 13 states that are located west of the general line of the Colorado-Kansas border.

A summarization of the location of existing and developing programs of veterinary medicine is illustrated in Figure 1.

FIGURE 1

LOCATION OF EXISTING and DEVELOPING PROGRAMS OF VETERINARY MEDICINE



Present Contractual Arrangements for Veterinary Medical Education by States of the Old West Region

No state in the Old West Region has an existing program of veterinary medical education. Consequently, the states of the region attempt to meet their responsibility for educational opportunity of their citizens and provide veterinary manpower services by contractual arrangements with existing programs. These contracts require the transfer of funds to the institutions that agree to receive students from the region. Generally speaking, the support fee is intended to provide for the net educational costs of professional education at the receiving institution. It is negotiated on a student per year basis.

Since Montana and Wyoming are members of the WICHE compact, residents of those states have access to the program at Colorado State University and the regional program of the Northwest. The annual support fee for those programs is presently $9,000 per student per year. That support fee is negotiated through the WICHE compact agreement. In addition to the contractual arrangement through WICHE, the state of Wyoming also has agreements with Kansas State University to accept Wyoming residents. The support fee at that institution is the same as the WICHE fee.

Through these contractual arrangements, the state of Montana has been able to place 12 to 13 students per year and Wyoming about 9 students per year into existing programs.

Since North Dakota, South Dakota and Nebraska are not members of the WICHE compact, those states must arrange for educational access of their residents to other existing programs. At the present time, North Dakota contracts with Iowa State University, Kansas State University and the University of Minnesota for admission of their students. The support fee at Iowa State University is presently being renegotiated. It is anticipated that the fee

will be similar to that of the WICHE requirement. The contract with the University of Minnesota provides for the transfer of $11,246 per student per year. Through these contractual arrangements, North Dakota obtains an average of about 12 students per year into existing programs.

The state of South Dakota presently has contractual arrangements with Iowa State University and Kansas State University for placement of the professional veterinary students. Costs of those programs is anticipated to be $9,000 per student per year. South Dakota generally places about 8 students per year at these institutions.

The state of Nebraska has negotiated agreements with Iowa State University, Kansas State University, University of Minnesota and the University of Missouri for admission of its students. Support fees at Iowa State University and Kansas State University are $9,000 per year and at the University of Minnesota, $11,246 per student per year. Nebraska has a reciprocity agreement with the University of Missouri for the exchange of students in certain programs including veterinary medicine. Transfer of funds is not required by that agreement. At the present time, Nebraska is able to place an average of about 22 students per year in those four programs.

Existing contractual arrangements have provided for a limited educational opportunity for residents of the Old West Region. The cost of this educational support is considerable and, at the present time, represents a transfer of over 2.2 million dollars per year of regional funds to institutions outside the region as an investment in student programs.

A summarization of the present contractual arrangements with existing schools of Veterinary medicine is presented in Table 1.

TABLE I. PRESENT CONTRACTUAL ARRANGEMENTS WITH EXISTING SCHOOLS OF VETERINARY MEDICINE

	RECEIVING INSTITUTION	ANTICIPATED COST/STUDENT/YEAR	USUAL NUMBER ADMITTED/YEAR	TOTAL STUDENTS IN FOUR YEAR PROGRAM (AVERAGE)	STATE COSTS PER YEAR (AVERAGE)
MONTANA	Colo. St. U.	$ 9,000[1]	12-13	50	$ 450,000
	Wash. St. U.	9,000[1]	12-13	50	$ 450,000
NEBRASKA	Iowa St. U.	$ 9,000[2]	12	48	$ 432,000
	Kans. St. U.	9,000[3]	4	16	144,000
	U. of Minn.	11,246	4	16	179,936
	U. of Missouri	Reciprocity[4]	2	8	---
			22	88	$ 755,936
NORTH DAKOTA	Iowa St. U.	$ 9,000[2]	6	24	$ 216,000
	Kans. St. U.	9,000[3]	2	8	72,000
	U. of Minn.	11,246	4	16	179,936
			12	48	$ 467,936
SOUTH DAKOTA	Iowa St. U.	$ 9,000[2]	6	24	$ 216,000
	Kans. St. U.	9,000[3]	2	8	72,000
			8	32	$ 288,000
WYOMING	Colo. St. U.	$ 9,000[1]	6	24	$ 216,000
	Kans. St. U.	9,000[3]	3	12	108,000
	Wash. St. U.	9,000[1]	0	0	---
			9	36	$ 324,000
	TOTAL FOR THE REGION		63-64	254	$2,285,872

1) Support fee is negotiated through the Western Interstate Commission for Higher Education (WICHE).
2) The contract with Iowa State University is presently being renegotiated. It is anticipated that the fee will be similar to the WICHE fee.
3) Kansas State University has announced that its fee will be the same as the WICHE fee.
4) Nebraska has a reciprocal agreement with Missouri for the exchange of students in certain programs including veterinary medicine.

Prospects for Increased Opportunity to Associate with Existing Programs of Veterinary Medicine

The question is occasionally asked: "With the recent expansion of existing programs and development of several new programs in the United States, why don't the states of the Old West Region expand and strengthen their contractual agreements with existing programs?" Consideration of that possibility has been given and considerable effort has been extended to accomplish that result. However, there are several reasons that the results have been less than satisfactory.

Opportunities for entrance to existing programs by non-resident students are extremely limited. Priorities for admission are given to the residents of those states that control the program. Second priority is extended to applicants originating from states that have formal contractual agreements with the receiving institutions. It is essentially impossible for students to gain access to the professional curriculum unless that student resides in a state with an existing program or one that has a formal contractual arrangement with the receiving institution. Colleges that accept non-resident students generally contract only with a limited number of other states in the immediate vicinity or region.

Even if access to programs in other areas of the United States could be obtained, the emphasis of the professional curriculum may not be oriented toward the needs of the animal industries of the Old West Region. For example, the developing program at Mississippi State University has specified that the emphasis of the curriculum will be on bovine, avian and aquatic animal medicine. Further, planning for the New England states has specified that the health care center at Boston will specialize in areas such as nutrition, laboratory animal

medicine,public health, comparative medicine, toxicology and pathology while the satellite facilities in other states will focus on such areas as aquatic, equine, bovine and avian medicine. While those programs would provide education that would be appropriate to this region, the overall balance and emphasis would not be completely appropriate to the needs of the region.

While contractual arrangements with existing programs do provide limited opportunities for education for residents of the sending states, the additional spinoff associated with a full program of veterinary medicine is not available. Contractual arrangements provide very limited opportunity to the sending states for expansion and improvement of continuing education, referral and consultation services in clinical medicine, or improvement and expansion of research in animal diseases.

Costs of contractual arrangements are considerable and a minimal economic gain is obtained. Most existing colleges of veterinary medicine presently require a support fee equivalent to the full net educational costs of the professional students it receives from another state. Transfer of those state funds outside of the region preclude the possibility of obtaining the benefit known as the economic multiplier effect associated with retaining state dollars at home.

Contractual arrangements with existing programs provide very limited opportunity for participation in the existing programs. The receiving institutions are naturally responsible for establishing admissions criteria, curriculum design, academic standards and program emphasis. Opportunity for input into those aspects of existing programs is limited or unavailable to sending states.

The past history of contractual arrangements demonstrates that they should be considered only as short term agreements. Experience has shown that

these agreements can and are terminated on very short notice. For instance, contracts that were formerly available with Colorado State University and Oklahoma State University for receiving students from the Dakotas and Nebraska were recently terminated. Also, the agreements with receiving institutions provide minimal assurance for student entry quotas.

In spite of certain limitations and disadvantages of contractual agreements, those arrangements do have certain benefits. They require no capital investment by the sending states and, other than supplying the dollars, no other commitments by the senders.

Efforts have been made to improve and strengthen existing contractual arrangements. Special efforts were made to expand agreements with programs in the neighboring states of the Old West Region. A discussion of those efforts will be presented in a later section of this report.

Report of Veterinary Manpower Studies

Several studies have been conducted that relate to the veterinary manpower needs in the Old West Region, other areas of the United States, and the country as a whole.

Two studies have specifically related to the veterinary manpower needs of the Old West Region. The first was a report prepared in 1971 by representatives of the University of Nebraska entitled, "Alternatives for Veterinary Medicine in Nebraska". The second was a report filed by Dr. Clarence Cole on April 15, 1975 entitled, "The Assessment of the Need for a College of Veterinary Medicine in the Old West Region". Both of those studies reported an existing and projected need for additional veterinary manpower in the region. Similar surveys conducted in other regions of the country report the same conclusions.

Two studies have been conducted at the national level. The first was prepared by the National Academy of Sciences, published in 1971, and entitled, "New Horizons for Veterinary Medicine". The second, "Veterinary Medicine--Its Requirements and Responsibilities", was published June 1, 1975 by the Joint Committee on Veterinary Education of the American Veterinary Medical Association and the Association of American Veterinary Medical Colleges, Inc. A copy of the latter report is included as Appendix A. Both of the national surveys reported an existing shortage of veterinarians and a projected need for the future. Recommendations for expansion of existing programs and development of new programs in veterinary medicine were recommended.

A third national survey is presently being conducted through the support of the American Veterinary Medical Association. The target date for release of that report is June, 1978.

Any attempt to accurately project long-range needs for a specific profession in a selected region of the nation is a most difficult and hazardous activity. The studies cited above were the most recent and appropriate reports available to the Study Team; however, they have recognized limitations in that some are based on nationally oriented data, others relate only to the needs of specific states, and the data cited in all studies are several years old.

Each of the past surveys made to determine the need for new veterinary programs has consistently projected substantial shortages of veterinarians, both nationally and regionally, for the next two decades. In the absence of substantive negative data, these studies must be accepted as valid and reliable in assessing future needs for the Old West Region.

The Study Team of the present program did not attempt to make additional in-depth studies of veterinary manpower needs. The group did not interpret that to be a charge of the present study and did not conduct additional surveys of that nature.

Planning Components Considered by the Study Team

Planning for a complete program in veterinary medicine requires the concurrent consideration of a number of interrelating factors. The process becomes even more complex when planning for a regional program.

The Study Team identified the following items that would require attention and consideration in the planning process:

1. Identification of the potential benefits of a program of veterinary medicine for the Old West Region.
2. Investigation of opportunities for shared programs with neighboring veterinary schools.
3. Identification and prioritization of alternative models or plans for a regional program.
4. Curriculum design.
5. Cost estimates:
   Construction
   Operating costs.
6. Administrative organization.
7. Curriculum standards.
8. Admission requirements and procedures.
9. Accreditation.
10. Methods of cost sharing.
11. Alternative funding proposals.
12. Implementation schedule.

Potential Benefits of a Program of Veterinary Medicine for the Old West Region

A school of veterinary medicine provides a number of benefits to the citizens that support that program. The advantages cited most frequently are that it offers an increased educational opportunity for students and supplies a method for providing veterinary manpower needs. However, there are a number of other benefits included in the realm of education, research and services that are provided to the citizens of the region. In some cases, the benefits can be quantified. In other cases, the advantages cannot be measured quantitatively, but they are real and valuable.

The Study Team identified the following potential benefits of a regional program for veterinary medicine:

1. Provides a balanced program of veterinary education, research and service at the most efficient expenditure of public funds.
2. Provides an assured, reasonable education opportunity for the citizens of the region.
3. Minimizes the complications and hardships of application procedures by students.
4. Provides a method for supplying veterinary services and manpower needs of the region that can be adjusted to meet future demands.
5. Enhances the retention of graduates in the home state or region.
6. Provides increased opportunity for continuing education of veterinarians and livestock owners.
7. Provides an organizational plan wherein each state in the region can participate at the level its citizens desire.
8. Vests control of programs and budgets in participating states.
9. Helps protect the investment in livestock through increased research and diagnostic assistance.
10. Provides for improved consultation and referral service for livestock owners, practicing veterinarians and governmental agencies of the region.

11. Improves level of professional services including consumer protection through public health activities.

12. Retains funds in the region and thereby initiates the economic multiplier effect.

13. Construction of facilities provides a "one-time" benefit of employment opportunity and materials aquisition.

14. Increases tax revenues to state and local governments.

15. Attracts federal, foundation, industrial and private funds.

16. Provides intangible benefits.

A brief discussion of each of the potential benefits is present in the following paragraphs.

1) Provides a balanced program of veterinary education, research and service at the most efficient expenditure of public funds.

A major advantage of a regional program is that it provides the opportunity to supply a superior program in veterinary medicine that utilizes the resources of participating states and distributes the cost of the full program among the participants. Consequently, the cost to each of the participating states is less than would be required to provide a free-standing program of equal quality by each individual state.

2) Provides an assured reasonable educational opportunity for the citizens of the region.

There is no program leading to the professional degree of veterinary medicine in the Old West Region. Therefore, states in the region must depend on existing programs to provide its residents access to education in this field.

As stated in a previous section of this report, states of the region have negotiated contracts with several existing schools to

accept their residents. Those contractual arrangements have provided limited opportunity for students to pursue the career of their choice. However, many well qualified individuals have been denied admission. This problem is common to all states that do not have an existing program of veterinary medical education within their state.

The above circumstances have provided a less than reasonable opportunity for regional students to pursue a career of their choice. A program of veterinary medical education in the region would not provide unlimited opportunity and access to veterinary education. However, it would make the opportunity more reasonable than now exists.

3) Minimizes the complication and hardships of application procedures by students.

In order to enhance their chances of gaining admission to an existing out-of-state school, regional students at the present time attempt to prepare themselves for application to a number of veterinary programs. The pre-veterinary course requirements for admission to the various schools differ considerably. This places the prospective applicant in a trying situation in that it is often quite difficult to satisfy the preprofessional requirements for several programs and pursue a baccalaureate program at the same time. Experience has shown that it is extremely difficult to accomplish all of those requirements plus degree requirements within a four-year period.

Another hardship suffered by the students is the requirement for considerable travel during the application procedures. Several schools require an on-campus interview if the student is to be

considered as a viable applicant for admission to their veterinary program. Those interviews are scheduled at the convenience of the Admissions Committee and, although some attempt is made to schedule interviews during intersemester periods or other class breaks, the meeting often requires that the student miss classes on their home campus.

4) Provides a method for supplying veterinary services and manpower needs of the region that can be adjusted to meet future demands.

Several studies cited in a previous section of this report were conducted in an effort to determine the veterinary manpower replacement needs for this region and other areas of the United States. Those reports indicate that veterinarians are needed to provide veterinary medical services in private practices, public health (including environmental health), animal disease regulatory agencies, research and teaching institutions, and in the biological and pharmaceutical industries.

The reports consistently indicate that all regions of the country have similar veterinary manpower shortages as those of this region. If those reports are accurate, the probability of filling the regional needs as a result of immigration of out-of-state veterinarians is not too likely.

5) Enhances the retention of graduates in the home state or region.

Several reports indicate that students tend to remain to live and work in the area where they receive their advanced education. In

the medical field, indications are that the students are more likely to be retained in those areas where they pursue their clinical studies[a,b].

Another factor that apparently influences the final location of professional graduates is the original residence of their spouse. Since many students marry during the period of their professional education and their exposure to marriageable partners is greatest at the institution where they are attending school, the likelihood of their marrying a non-resident is quite high; consequently, their future location is likely to be influenced.

6) Provides increased opportunity for continuing education of veterinarians and livestock owners.

Medical education beyond the professional degree is essential and becoming a requirement for relicensure in many professions including veterinary medicine.

A program of veterinary medicine would provide for a process of need assessment, program development, presentation, and evaluation of continuing education for the region's veterinarians and livestock producers. Facilities and personnel required for other educational and research programs in the school may also serve programs of continuing education.

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[a]Cole, C. R. and Toran, V. B.: Northern Plains College of Veterinary Medicine: A Feasibility Study, OWRC, Rapid City, South Dakota, 1976. p. 3

[b]Schwarz, M. R.: WAMI - An Experiment in Regional Medical Education. West. J. Med. 121 333-341, 1974.

An effective continuing education program may be largely self-sustaining. It should be possible for a program to be reimbursed for the direct cost of specific programs exclusive of fixed cost such as space and salary.

7) Provides an organizational plan wherein each state in the region can participate at the level its citizens desire.

Establishment of a regional plan for veterinary medicine could be structured to meet the needs of educational opportunity and services according to the needs and desires of the participating states. Varying levels of active or contractual participation could be provided.

8) Vests control of program and budgets in participating states.

Contractual arrangements for placing professional students in other states provides for little or no opportunity for participation in the administration of the program at the receiving institution. Some contracts designate a "quota" of students to be admitted each year; however, most agreements do not provide for an assured number for any given year.

Participation in a program supported within the region would provide for the opportunity to obtain an assured number of students in the program each year, provisions for participation in the admission and selection of students, input into curriculum requirements and academic standards, and administration of the overall program. Responsibilities for control of budgets and personnel would reside with the administrative authority of the participants.

9) Helps protect the investment in livestock through increased research and diagnostic assistance.

The magnitude of the livestock industry and the investment that the owners have in that industry is tremendous in the Old West Region. Estimates of the gross income provided by meat animal resources of the region were in excess of 4.4 billion dollars in 1976. Those estimates were for meat animals alone and did not include dairy and poultry products, animal by-products, or associated industrial factors such as animal feed, supplies, and equipment; meat and fiber processing; companion animal interests; or others. A summarization of the January 1, 1977 inventory and 1976 gross income provided by meat animal resources of the Old West Region is presented in Table 2.

A program of veterinary medicine in the region or state would help prevent, control and eradicate diseases that affect the poultry and livestock industries. Also, it provides a means for monitoring animal disease and for early detection of new (foreign and exotic) diseases that might be introduced into the region's animal and poultry populations.

10) Provides for improved consultation and referral services for livestock owners, practicing veterinarians and governmental agencies of the region.

The academic faculty and resources of a professional teaching program provide improved consultation and referral services for "problem" cases that require more in-depth study, expertise and/or sophisticated equipment than that available in the community

TABLE 2. MEAT ANIMAL RESOURCES OF THE OLD WEST REGION*

		MONTANA	NEBRASKA	NORTH DAKOTA	SOUTH DAKOTA	WYOMING	TOTALS
INVENTORY JAN. 1, 1977	CATTLE & CALVES	2,980,000	6,450,000	2,235,000	3,650,000	1,550,000	16,865,000
	HOGS & PIGS	181,000	3,100,000	330,000	1,500,000	32,000	5,143,000
	SHEEP & LAMBS	620,000	210,000	262,000	659,000	1,195,000	2,946,000
GROSS INCOME 1976	CATTLE & CALVES	$382,192,000	1,587,484,000	353,157,000	992,348,000	258,963,000	$3,574,144,000
	HOGS & PIGS	23,784,000	441,762,000	42,785,000	238,233,000	4,248,000	750,812,000
	SHEEP & LAMBS	10,221,000	9,051,000	5,306,000	31,728,000	20,900,000	77,206,000
	TOTAL GROSS INCOME FROM MEAT ANIMALS	$416,197,000	$2,038,297,000	$401,248,000	$1,262,309,000	$284,111,000	$4,402,162,000

*SOURCE: "MEAT ANIMALS - PRODUCTION, DISPOSITION, INCOME, 1975-1976" Statistical Reporting Service, U.S.D.A. (April, 1977).

practice environments. This would be a valuable asset to livestock owners and practicing veterinarians of the region.

11) Improves the level of professional services including consumer protection through public health activities.

The close relationship between human and animal disease is becoming well-known by the general public. Under varying circumstances, some 175 animal diseases are known to be communicable to man. Veterinarians, whether in private practice or public, are engaged in public health programs to control and prevent such diseases as typhus, rabies, encephalitis, tuberculosis, psittacosis, brucellosis and other such zoonoses. With increased populations and closer association of animal and animals, the significance of zoonotic disease becomes increased.

Through food inspection and regulations, veterinarians directly protect the consumer from infectious and toxic substances derived from animals. Veterinarians are directly responsible for supervising inspection for both domestic and foreign meat and meat by-products.

12) Retains funds in the region and thereby initiates the economic multiplier effect.

One of the major benefits of a regional program is the economic effect of retaining funds within the region rather than transferring monies elsewhere. Substantial revenues flow to the community and region as a direct result of the presence and functions of an activity such as that generated by a school of veterinary medicine. The region in which the program is located will receive direct

economic benefits in various ways among which are increased employment and revenue generated by payroll and program purchases. The total effect of these revenues is amplified by the principal known as the economic multiplier effect. The income multiplier factor generally accepted for this effect varies between 2 and 3 as the funds are recirculated through the community.

Annual direct economic benefits due to the multiplier effect apply to faculty and staff salaries, personal income of students and spouses, bank deposits, and increased retail sales in the community.

13) Construction of facilities provides a "one-time" benefit of employment opportunity and materials aquisition.

Construction of facilities would be required for a new program for veterinary medical education. Revenues from personal income of construction workers, materials, supplies and equipment would be generated and the economic multiplier effect would further magnify the influence of those funds.

14) Increases tax revenues to state and local governments.

The increase in state and local tax revenues generated by the operation of a program of veterinary medicine should be considered. Although these revenues would not be large from a comparative standpoint, there would be tax funds generated to help support state and local governments. Revenue from this source include taxes on personal income, real estate, retail sales, gasoline, inheritance, and others.

15) Attacts federal, foundation, industrial and private funds.

A program of veterinary medicine within a state or region makes that institution eligible for application to a number of funding

sources that are not otherwise available. As one example, during the period from 1966 through 1976, existing programs of veterinary medicine in the United States received a total of $118,222,267 in federal funds. Those funds were largely for construction assistance, capitation grants, students scholarships and loans, and special projects. Eligibility to compete for those funds was limited to existing programs of veterinary medicine.

16) Provides intangible benefits.

There are many economic advantages received by a program of education that are difficult to quantify. College personnel render uncompensated services on task forces, committees and other public services; library resources of the program are extensively utilized by allied interest groups; and visitors are drawn to the region for business, recreation, scientific purposes, education and personal visits. Also, associated research organizations and interests are developed as a result of the activities and interests of a medical educational program.

Investigations of Opportunities for Shared Programs with Neighboring Veterinary Schools

One of the first activities of the Study Team was to investigate what opportunities might exist to provide improvement of veterinary medical programs in the Old West Region in cooperation with an existing school in a neighboring state. To initiate this effort, the deans of each of the programs with which contracts are presently available were invited to meet as a group with the Study Team.

Response of the deans to the invitation was excellent and a meeting was held at Rapid City, South Dakota on March 24, 1977. Meeting with the Study Team were Dean S.A. Ewing, University of Minnesota; Dean P.T. Pearson, Iowa State University; Associate Dean E.A. Corley, University of Missouri; Dean D.M. Trotter of Kansas State University; and Dean W.J. Tietz, Colorado State University.

Each of the deans was requested to respond to several questions relating to efforts to improve educational opportunity and veterinary services in the Old West Region. The questions and general responses were as follows:

Is there a possibility of increasing the number of OWR students entering existing programs and providing for an assured quota each year?

Dean Ewing reported that Minnesota is planning to expand student numbers from 80 to 120 per entering class when "Phase II" of their construction plans are completed. When that happens, there will probably be opportunities for increases for students from Nebraska, North Dakota, and South Dakota; however, the Phase II building project has not been approved as yet.

Dean Pearson indicated that Iowa State University intended to provide increases of a few students from Nebraska, North Dakota and South Dakota within the next year or two.

Deans Corley and Trotter reported that there was not much likelihood of significant increases at their institutions in the near future. In fact, Dean Trotter suggested that Kansas State University may reduce their veterinary class size from 105 back to 80 when their federal commitment expires in another nine years. If that happens, the number of entering residents and non-residents would be reduced to maintain the same ratio that presently exists.

Dean Tietz reported that Colorado State University has initiated plans to expand its program and to provide for a significant increase for residents of WICHE states (slightly more than double the number of non-residents that were previously admitted).

Regarding the possibility of assured quotas to contracting states, Dean Tietz described a plan for "rolling averages" to be admitted from each WICHE state that participates with CSU. The rolling average concept provides that an assured number of students would be admitted over a period of several (4 to 5) years rather than a specified number each year.

Deans Ewing, Pearson and Corley felt that assured quotas of entering students may be possible to negotiate if there were conditions built into the contract to assure that the quality and preparation of the applicants was satisfactory to the receiving institution.

Dean Trotter felt that assured quotas at Kansas State University was not likely to occur.

Could long-term agreements be negotiated for student contracts?

Dean Tietz stated that the new arrangements negotiated with WICHE compact states will provide for commitments for 20 years or longer.

Deans Ewing, Pearson and Corley indicated that some type of long-term agreement might be negotiated with their respective institutions; however, all of the deans emphasized that all contracts between states contain escape clauses that allow termination by either party with a one or two year notice. Consequently, all contracts are considered rather short-term in nature.

Dean Trotter felt that long-term agreements for student contracts at KSU was not a likely possibility.

Is there any possibility that representatives of the sending states might provide input or participate in matters such as student selection procedures, curriculum planning and budget analysis?

The general response was that these matters are the responsiblity of the faculty and administration of the educational institution and that active participation by other parties was not appropriate.

The programs at Minnesota and Colorado State University presently have Advisory Councils to allow advisory input on such matters. Participation on those councils is provided for representatives from contracting states. However, it was

emphasized that the function of the Councils is advisory rather than administrative in nature.

What arrangements might be made to improve programs such as continuing education, consultation services, and referral services in the Old West states?

The deans were unanimous in their opinion that these services were presently available in that their respective faculties and facilities are available to provide the services. No recommendations were made to expand those activities; however, Dean Tietz stated that he envisioned the possibility of establishing satellite diagnostic and clinical facilities in some WICHE states in the future.

Is there the possibility that some of the Old West states might enter into an arrangement for a shared curriculum with an existing program(s) by providing instruction during either the first or the last portion of the professional studies?

Dean Pearson stated that this might be possible in the future. He anticipates that when class sizes at Iowa State University reach 120 students in their clinics, there might be a need to provide some clinical instruction at other sites.

Dean Tietz also envisioned such a possibility in the future.

Dean Ewing stated that some Minnesota students presently serve externship experiences in some of the Old West states.

Deans Corley and Trotter did not feel there was much likelihood that a shared curriculum might be established in cooperation with their institutions.

In summary, the Study Team found the meeting with the deans to be informative and worthwhile. The deans indicated that they were aware and sympathetic to the efforts to improve veterinary medicine in the Old West Region; however, they face some limitations in what they can do because their first priority is obviously to their respective home state.

Results of the discussions indicated that there may be a slight improvement in the total number of Old West students admitted to existing programs and that there might be the opportunity to negotiate for assured quotas of students on long-term contracts at some institutions.

Evidence of opportunities to expand and improve veterinary services in the Old West Region and other activities with existing programs were not encouraging.

The deans were unanimous in their opinion that a new program for veterinary medicine in the Old West Region should not be initiated. They advised the Study Team that they felt the best solution was to support the expansion and strengthening of existing programs.

Identification of Alternative Models for a Regional Plan for Veterinary Medicine

In addition to the possible option of continuing present contractual agreements with existing schools of veterinary medicine, the Study Team identified and outlined seven other alternative models for a regional program within the Old West States. Also, the various advantages and disadvantages of each of the models were outlined.

The report of the alternative models was presented by the Study Team to the Academic Advisory Group at a May 17, 1977 meeting in Brookings, South Dakota. A copy of the report is attached as Appendix B.

After study and discussion of the various models, the Academic Advisory Group instructed the Study Team to concentrate further studies on the comparative features of five alternative plans. Those were:

1. Cole Plan.
2. Study Team Plan.
3. Single Campus Regional School in Nebraska with Guaranteed Contracts to other Old West States.
4. Free-Standing School at Nebraska.
5. Contractual Agreements with Existing School of Veterinary Medicine.

Descriptions of those alternatives and a discussion of the advantages and disadvantages of each are presented on the following pages.

COLE PLAN

The plan presented by Dr. Clarence Cole for the development of a veterinary educational program in the Old West Region provided that the first year of the professional curriculum would be offered by each of the departments of the veterinary science at the five land grant universities in the region. After the first year of the curriculum, all students would complete their training at a "central" or "base" teaching facility provided at the University of Nebraska at Lincoln. The plan proposed by Dr. Cole closely resembled the Washington-Alaska-Montana-Idaho (WAMI) program for regional medical education in the Northwest states. The only essential difference between the WAMI program and that proposed by Dr. Cole was that the former was started with an existing school at the University of Washington in Seattle, whereas Dr. Cole's plan proposed a new school of veterinary medicine at the University of Nebraska at Lincoln to serve as the central school of the regional program.

A modification of the Cole Plan was prepared for discussion by the OWRC Academic Advisory Group. The modified plan provides for the active participation of North Dakota, South Dakota, Wyoming and Nebraska in the initial stages of the program with Montana having the option to participate on a contractual basis. Consideration for the optional future active participation by Montana was also made. A diagramatic presentation of the Cole Plan is presented in Figure 2.

The OWRC study team considered the following advantages and disadvantages of this plan.

Advantages

--Provides for the development of a true regional program with commitments and responsibilities by several states.

--Improves the opportunity for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Compliments and strengthens existing programs of participating states.

--Portions of the necessary resources (faculty & facilities) may be presently available on existing campuses.

Disadvantages

--Requires some duplication of programs (first year of the professional curriculum) in all participating states.

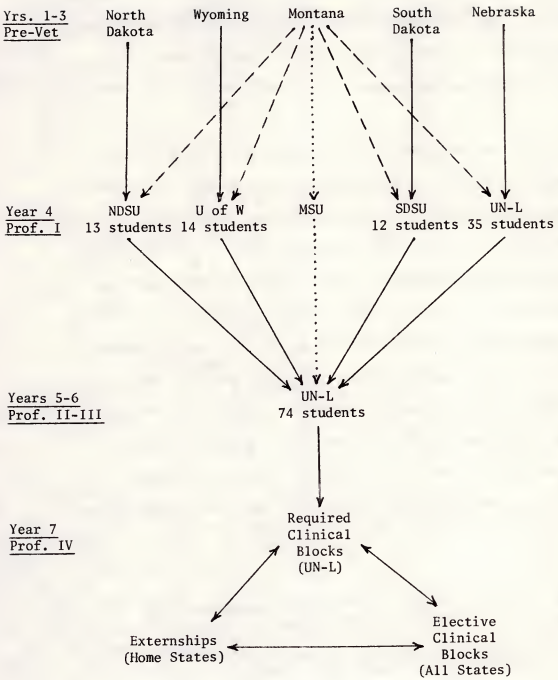
--Minimal class sizes at some institutions reduces efficiency.

--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Provides only one year of residency in the home state during professional training (except at Nebraska).

FIGURE 2

Cole Plan



— — — — Indicates optional participation on a contract basis.

.....Indicates optional future participation on an active basis.

STUDY TEAM PLAN

A proposal that combines several features of other plans was developed and is presented as the "Study Team Plan". This proposal combines features that are found in the Cole Plan and the Kavanaugh Plan (Kavanaugh, J.F., J. Vet. Med. Ed. 3, 1976). An outline of the Study Team Plan is presented in Figure 3.

The Study Team Plan provides that the first year of the professional curriculum would be offered at North Dakota State University, South Dakota State University, University of Wyoming and University of Nebraska at Lincoln in the initial stages of the regional program. Classes at each of these institutions would be composed of D.V.M. candidates plus approximately equal numbers of bachelor or masters degree candidates. After the first year of the professional curriculum, all D.V.M. candidates would proceed to the last three years of the curriculum at the base school at UNL. Those students that participated as bachelor or masters students would enter the employment market or continue graduate studies in a related field.

Montana could participate in this program on a contractual basis or would have the option to participate on an active basis in the same manner as the other states.

Advantages

--Provides for the development of a true regional program with commitments and responsibilities by several states.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Compliments and strengthens existing programs in participating states.

--Portions of the necessary faculty & facilities may be presently available on existing campuses.

--Improves efficiency due to more optimal class sizes.

--Allows utilization of some facilities for veterinary students and other life sciences or animal sciences majors.

--Strengthens current course offerings and programs in life sciences and animal sciences.

--Provides a "reserve" supply of students in the first year of the professional curriculum that could enter into the professional program in the event of drop-outs or failures.

Disadvantages

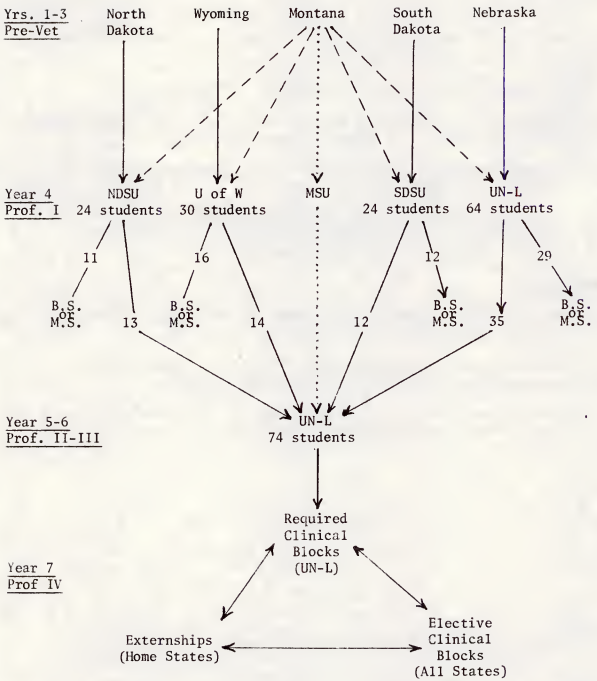
--Requires some duplication of programs (first year of professional curriculum) in all participating states.

--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Provides only one year of residence in the home state during professional training (except at Nebraska).

FIGURE 3

Study Team Plan



– – –Indicates optional participation on a contract basis.

·· ·····Indicates optional future participation on an active basis.

SINGLE CAMPUS REGIONAL SCHOOL IN NEBRASKA WITH GUARANTEED CONTRACTS TO OTHER FOUR STATES

As directed in the program objectives defined for the Study Team in the current project, the feasibility of establishing a new school of veterinary medicine in Nebraska with guaranteed contracts to the other four regional states is presented for discussion. This plan is outlined in Figure 4.

Advantages

--Relatively simple to administer.

--Requires minimal investment in facilities in states other than Nebraska.

--Improves educational opportunity for students in the region.

--Requires minimal movement of students in the professional program.

--Requires no duplication of programs.

--Offers the entire program at one site with no separation of the pre-clinical and clinical curriculum.

--Provides great strength for veterinary medicine in Nebraska (but limited strength to other areas of the region).

Disadvantages

--Does not provide for the development of truly regional program in veterinary medicine.

--Requires transfer of considerable funds for operating costs and building use fees across state lines.

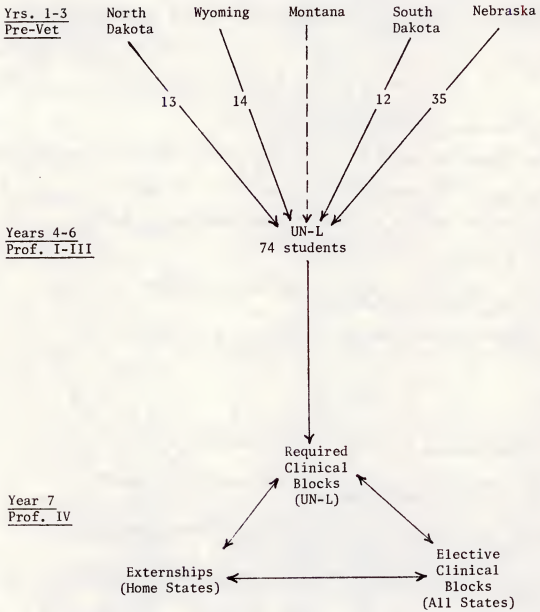
--Limits the opportunities for improvement of veterinary and other health services in states other than Nebraska.

--Provides limited augmentation of other institutional programs in sending states.

--Fails to adequately utilize the potentially available resources in some states.

FIGURE 4

Single Campus Regional School in Nebraska
with Guaranteed Contracts to
Other Four States



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FREE-STANDING SCHOOL AT NEBRASKA

For purposes of comparison, the Academic Advisory Groups requested the Study Team to include studies of a free-standing school at Nebraska. A program of this type would function similarly to existing programs of veterinary medicine by offering the complete professional program at one site and accepting students from other states on a contract basis. An outline of this model is presented in Figure 5.

Advantages

--Relatively simple to administer.

--Requires no investment in facilities in states other than Nebraska.

--Improves educational opportunity for students in the region.

--Requires no movement of students in the professional program.

--Requires no duplication of programs.

--Requires no separation of the preclinical and clinical curriculum.

--Provides great strength for veterinary medicine in Nebraska (but limited strength to other areas of the region).

Disadvantages

--Does not provide for the development of a truly regional program in veterinary medicine.

--Requires transfer of considerable funds for operating costs and building use fees across state lines.

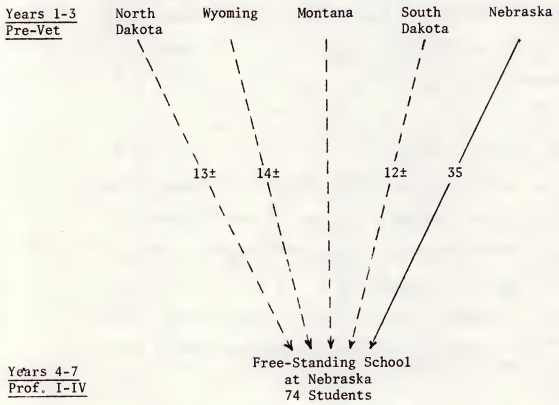
--Provides no opportunity for improvement of veterinary and other health services in states other than Nebraska.

--Provides no augmentation of other institutional programs in sending states.

--Fails to adequately utilize the potentially available resources in some states.

Figure 5

Free-Standing School at Nebraska



- - - - Indicates participation on a contract basis.

CONTRACTUAL AGREEMENTS WITH EXISTING SCHOOLS

A discussion of the present contractual agreements with the existing programs was presented in an earlier section of this report. For purposes of comparison with other alternatives, a further analysis of those agreements will be considered. An outline of the alternative is presented in Figure 6.

Advantages

--Requires no capital investment by the sending states.

--Requires no long term commitment by the sending states.

--Relatively simple to administer.

Disadvantages

--Fails to establish a regional program in the Old West States.

--Limited opportunities for students--spaces are not available to reasonably meet needs of regional applicants.

--Reduces likelihood of meeting veterinary needs of the region.

--Complicates application procedures for students.

--Requires that students travel out of the region to obtain their education.

--Reduces likelihood that graduates will return to home state to practice.

--Requires transfer of entire support fees out-of-region with no economic multiplier effect to the sending state.

--Provides no opportunity for participation in control of the program.

--Provides no opportunity for improvement of health services in the home region (consultant and referral services, public health).

--Provides no augmentation of biological sciences in the region.

--Provides no improvement in continuing education in region.

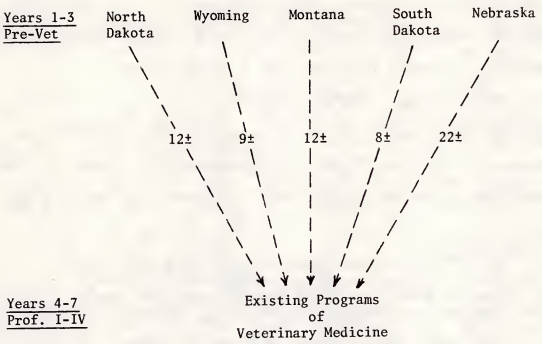
--Provides no improvement in employment opportunities related to conduct of the program in the region.

--Restricts opportunity to compete for certain federal, foundation, industrial and private funds.

--Provides no increase in tax revenues in sending states.

FIGURE 6

Contractual Arrangements with Existing Schools



NOTE: Numbers represent approximate number of students that are presently accepted into existing programs each year.

Preliminary Considerations for Curriculum Design

Final planning and design of the professional curriculum for a program in veterinary medical education is the responsibility of its faculty. The Study Team recommends that the privilege and responsibility for final details of curriculum planning be delegated to the Dean and faculty members recruited to initiate the program. However, some preliminary considerations and examples of curriculum planning and design must be made in order to proceed with other recommendations concerning a shared program in professional veterinary education for the Old West Region.

The Council on Education (COE) of the American Veterinary Medical Association serves as the accrediting body for programs of veterinary medicine. Guidelines provided by the COE for design of the professional curriculum are as follows:

> The curriculum should permit adjustment to the needs of veterinary medicine as a growing and expanding science; it should be sufficiently flexible to permit adjustments as suggested by experience and advances in knowledge.
>
> The curriculum should provide a sound foundation in the fundamentals of veterinary medicine, thereby equipping the student for the many responsibilities of his profession. It should develop habits of mind that will inspire the student to continue to educate himself throughout life and fully appreciate his professional obligations.
>
> In its evaluation, the Council will study the curriculum as a whole and in terms of its related parts. The professional curriculum shall extend over a period of at least four academic years of not less than thirty-two weeks each, averaging at least thirty clock hours per week.
>
> The curriculum should provide adequate instruction in the following subjects as applied to the various species of animals; anatomy, including histology and embryology; physiology; pharmacology; microbiology,

> including bacteriology, mycology, virology and immunology; pathology; parasitology; biochemistry; internal medicine; preventive medicine and public health; obstetrics; surgery; radiology; biometrics; anesthesiology; ophthalmology; and professional and public relations.
>
> In the clinical years, there is no adequate substitute for the "case method" of instruction. Students shall be supervised individually for applied training in hospital wards, ambulatory clinics, diagnostic and necropsy laboratories, as well as in disease control and veterinary public health. Such assignments should occupy most of the senior year and should be correlated with informal conferences, rounds in the hospital, and library assignments. Students must keep records of such activities. (From Accreditation Policies and Procedures, American Veterinary Medical Association.)

Several approaches to delivery of the professional curriculum are possible. Most existing programs utilize a traditional approach by providing courses related to specific subject or discipline areas. Other programs have aligned their curricula for delivery of instructional packages oriented along body system sequences.

An outline for a traditional professional curriculum for veterinary medicine is provided in Figure 7. This outline designates the various subject areas that are covered and the approximate time allotments for each area of instruction. The first three years of the professional curriculum provide course material in a traditional lecture-laboratory format.

During the fourth year of the professional curriculum, regardless of the type of plan that might be adopted and developed as a regional program, it is proposed that a curriculum design be adopted that will utilize the block scheduling concept for the provision of clinical instruction. This type of curriculum design has been adopted by several existing veterinary schools and is being utilized with considerable success.

The block scheduling plan requires a deviation from the traditional university calendar. The final year of study is divided into 12 one-month

FIGURE 7. Outline of a Traditional Professional Curriculum for Veterinary Medicine

Year I	Semester Hours/Year
Comparative Anatomy of Domestic Animals	10
Microscopic Anatomy	4
Embryology	3
Physiology of Domestic Animals	9
Physiological Chemistry	3
Biometrics	3
Feeds and Feeding	3
Introduction to Veterinary Medicine	3
	38
Year II	
Pharmacology	8
Toxicology	2
Pathology	8
Bacteriology and Mycology	6
Virology	3
Immunology	3
Parasitology	5
Public Health and Epidemiology	3
	38
Year III	
Clinical Pathology	3
Radiology	3
Large Animal Medicine	9
Small Animal Medicine	8
Avian Medicine	2
Lab Animal Medicine	1
Surgery	7
Obstetrics	4
Junior Clinics	3
	40
Year IV	
Food Animal Medicine and Surgery	4
Equine Medicine and Surgery	4
Small Animal Medicine and Surgery	4
Clinical Diagnostics	4
Elective Block 1	4
Elective Block 2	4
Elective Block 3	4
Elective Block 4	4
Externship 1	0
Externship 2	0
	32

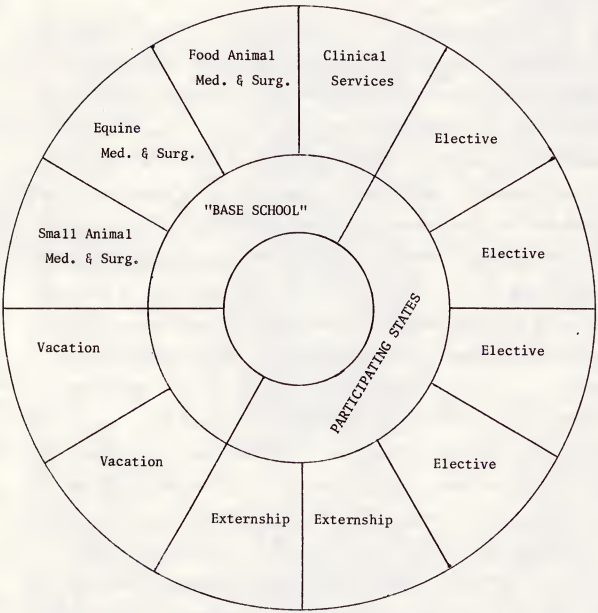
segments and instruction is scheduled so that students spend all day, every day for the one-month period in a clinical subject area. These educational experiences provide for concentrated, in-depth study and practical exercises in clinical subjects.

It is proposed that ten blocks will be required for graduation. Four of these blocks would be scheduled by all students as core requirements and would be offered at the teaching hospital-clinic provided at UN-L. The subject areas for the four required blocks would be Food Animal Medicine & Surgery, Equine Medicine & Surgery, Small Animal Medicine & Surgery, and Clinical Services. Students would also be required to schedule four elective blocks that would be selected to strengthen the career objectives of the individual student. Elective blocks could be developed and delivered in the participating states with the intention that the strengths and resources of the states would be maximally utilized and unnecessary duplication avoided. Examples of elective blocks that might be developed include a block in Obstetrics & Theriogenology provided in cooperation with the Meat Animal Research Center at Clay Center, Nebraska or Herd Health Block in Food Animal Medicine provided at the University of Nebraska, North Platte Station at North Platte, Nebraska. Similar blocks utilizing existing resources could be developed in all of the participating states. An additional two months of externship experiences would be required of all students. Students would be encouraged to schedule externships in their home state. The other two months of the twelve-month period may be scheduled as vacation time for the students.

A diagramatic representation of the block scheduling plan is presented in Figure 8.

FIGURE 8

Proposed Block Scheduling
for the
Fourth Year of the Professional Curriculum



Each block = one month of full time activity.

Blocks required for graduation:
Four required blocks provided at the teaching hospital-clinic at UNL.
Four elective blocks provided by any of the participating states.
Two externships.

Several colleges of veterinary medicine have adopted a curriculum design that deviates from the previously described traditional style. Instead, the bulk of the curriculum is provided by organizing the subject matter into courses in which the normal structure and function, abnormalities, diseases, treatment, surgery, etc. of the various systems of the body are correlated into sequences of instruction. These courses are generally "team taught" by instructors from various disciplines of the veterinary faculty.

A third type of curriculum design is that of independent study or self-paced instruction. Several schools of medicine and dentistry have adopted this type of design on an experimental basis. However, no program of veterinary medical education presently utilizes this approach.

The type of curriculum design that might be adopted for the Old West Regional program will be governed to a certain extent by the organizational plan that is adopted for the regional program. For example, if the "Cole Plan" were adopted, it would be quite difficult to initiate the systems approach and at the same time retain the block scheduling concept during the fourth year of the professional curriculum. It would be difficult to complete all areas of systems instruction during the first three years of the program. Assuming that the block scheduling plan for the fourth year was abandoned, it would be possible to provide the systems approach by an integration of several courses (anatomy and physiology) during the first year and then organize the pathology, treatment, surgery, etc. on a systems basis during the second, third, and fourth years of instruction.

If the "Study Team Plan" was selected as the plan for the region, there would be further limitations on the curriculum design that could be

adopted. Enrollment of students other than those in the professional veterinary curriculum would make it difficult to integrate various subject areas in the first year of the professional curriculum into one course, i.e. integration of all areas of anatomy and physiology into one instructional package. Scheduling of this type of course would be difficult and would provide an undue hardship on those students that are not enrolled in the professional curriculum.

A single campus regional school at Nebraska would provide no major limitations on the type of curriculum design that might be adopted.

The option of contracting with an existing school in a neighboring state would provide no opportunity for planning a curriculum because the design would be structured by the faculty of the receiving institution.

Computer Network to Enhance Instruction, Veterinary Services and Communication in the Old West Region

In looking at the Old West Regional College of Veterinary Medicine, and the need to tie the program together, a computer network would be the most logical approach for this type of a connection.

To extend the usefulness of the teaching material all of the pertinent data on each case would be put on a computer and stored in a retrievable system and be made available to the outlying clinics through the interconnection of a computer network. This would allow facilities located away from the base teaching hospital to have access to clinical cases that have been through each of the other facilities.

The base for this type of a computer network is already established in the University of Nebraska Agnet program. This would require terminals in each of the outlying facilities and at the teaching hospital. These should be hooked into the computer base at the University of Nebraska facility and each case would be stored in such a manner that the cases with similar symptoms could be retrieved from the system and looked at as a comparison to enable the clinician to perhaps make a tentative diagnosis on some of the cases in a much more rapid fashion.

This computer network should also be made available to practitioners that would want to access the computer network on a continuing education basis. The possibilities of this type of set up are unlimited. It would be very difficult to put a dollar value on this type of service to the livestock industry, to the veterinary profession and teaching. The continued education that this would allow to the veterinary profession would be limited strictly by the imagination of the people involved.

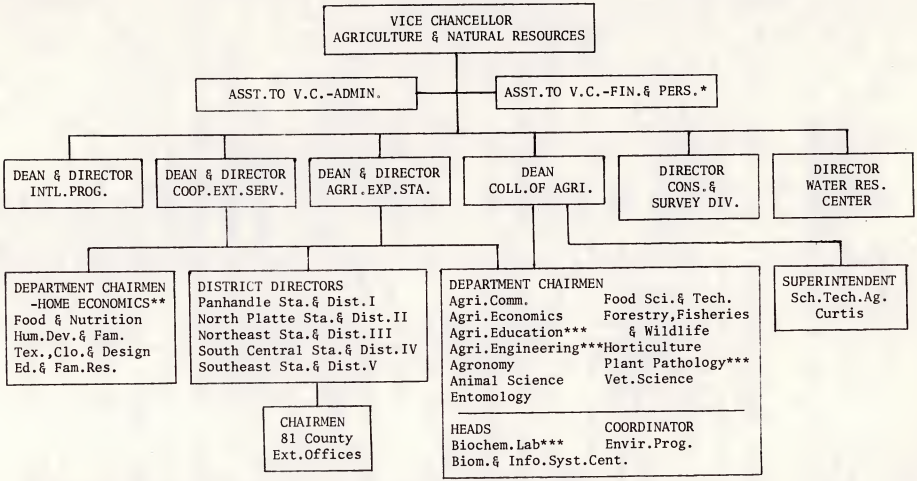
Governance and Administration

The Study Team and Academic Advisory Group determined that any plan for a regional program in veterinary medicine should center around a "central" or "base" school. Further, it was decided that the University of Nebraska-Lincoln should serve as the base school. That decision was based on the observations that: 1. the state of Nebraska would have a major commitment and investment in such a program; 2. the "Cole Report" indicated that Lincoln, Nebraska was the most appropriate site for development of a central teaching facility; and 3. many individuals and groups from Nebraska have shown a keen interest in the development of an improved program for veterinary medicine.

The decision was also made that the University of Nebraska-Lincoln would assume responsibility for over-all governance and administration of the educational aspects of the program and serve as the degree granting institution. However, depending on the type of program that might be adopted for the region, other participating institutions would have the opportunity and responsibility for input into such matters as curriculum, academic standards, student admissions and other affairs.

The most appropriate placement of a professional program for veterinary medicine at the University of Nebraska-Lincoln is within the organizational structure of the Institute of Agriculture and Natural Resources (IANR). Within this structure, the Dean of the proposed College of Veterinary Medicine would relate directly to the Vice Chancellor, IANR and would assume a similar relationship as other Deans and Directors of the IANR. An administrative chart of the present structure of the IANR is shown in Figure 9.

Figure 9. ADMINISTRATIVE CHART FOR THE INSTITUTE OF AGRICULTURE AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA-LINCOLN



*Assistant to the Vice Chancellor for Finance and Personnel also carries responsibilities for the Deans and Directors.

**Department Chairmen of Home Economics report to the Dean and Director of Cooperative Extension and the Dean and Director of Agriculture Experiment Station for programs in extension and research respectively, and to the Dean of Home Economics for academic programs.

***Administrative relationships also exist with the College of Engineering,School of Life Sciences, or Teachers College.

The organization of a regional program within the above structure might vary with the type of program that was adopted. However, it is proposed that the structure for the Cole Plan and the Study Team Plan would be the same.

The chief administrative officer for both of the previously mentioned plans would be the Vice Chancellor, IANR, UN-L. It is proposed that an Administrative Council composed of the Vice Chancellor's counterpart at each of the other participating institutions would serve as a body to provide input into administrative matters of the program.

A Coordinator of Regional Programs of the OWRC would serve as a fiscal officer for coordinating receipt and disbursement of funds to be transferred between states. That person would also serve as the project coordinator for educational grants and contracts that were generated by the programs as a whole.

An Advisory Council composed of the department heads and chairmen would provide input to the dean of the program on matters such as curriculum, academic standards, student admissions, continuing education and other affairs. Joint faculty committees, appointed by the Advisory Council, would be responsible for input on those items.

Matters relating to the professional curriculum would be the responsibility of each institution delegated for delivery of the respective segments. Administration of those affairs would be by the Dean of the College in concert with the Advisory Council. Other departmental programs such as cooperative extension, experiment station research and resident instruction would remain related to the appropriate administrative officer at each institution.

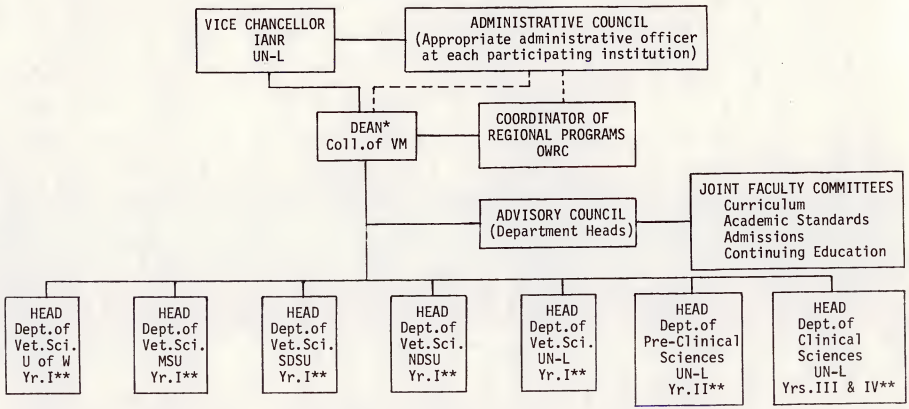
A proposed organization structure for either the Cole Plan or the Study Team Plan is illustrated in Figure 10.

The organizational structure for a Single Campus Regional School at Nebraska would be planned similar to that previously described. However, since the first year of the professional program would be offered only at UN-L, the relationship of those programs in the over-all structure is changed. The proposed organizational plan for a single campus regional school is shown in Figure 11.

The administration of a free-standing school at Nebraska would function similarly to existing programs of veterinary medicine. However, an Advisory Council may be established to serve an advisory capacity on matters such as curriculum, student admissions and other affairs. A proposed structure for a free-standing school is illustrated in Figure 12.

Figure 10. PROPOSED ORGANIZATIONAL STRUCTURE FOR THE OLD WEST COLLEGE OF VETERINARY MEDICINE

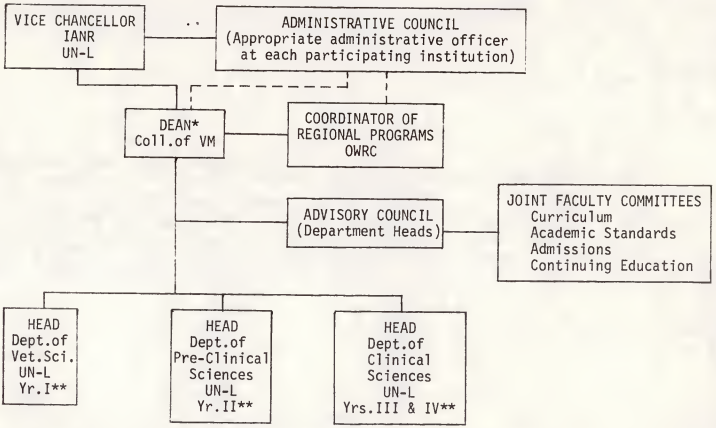
COLE PLAN
or
STUDY TEAM PLAN



*The Dean of the College of Veterinary Medicine would also serve as Assistant Director of Cooperative Extension and Agriculture Experiment Station at UN-L for administration relating to those programs.

**Departmental programs of cooperative extension, agriculture experiment station, and resident instruction would relate to the appropriate administrative officer at each respective institution.

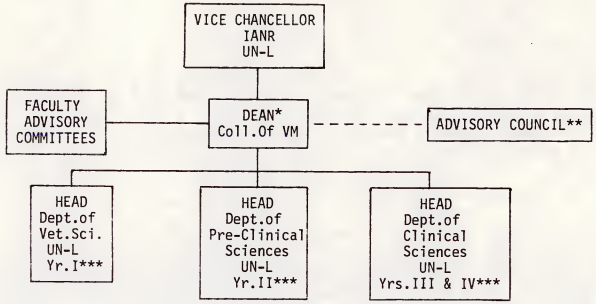
Figure 11. PROPOSED ORGANIZATIONAL STRUCTURE FOR THE OLD WEST COLLEGE OF VETERINARY MEDICINE SINGLE CAMPUS REGIONAL SCHOOL AT NEBRASKA



*The Dean of the College of Veterinary Medicine would also serve as Assistant Director of Cooperative Extension and Agriculture Experiment Station at UN-L for administration relating to those programs.

**Departmental programs of cooperative extension, agriculture experiment station, and resident instruction would relate to the appropriate administrative officer.

Figure 12. PROPOSED ORGANIZATIONAL STRUCTURE FOR THE OLD WEST COLLEGE OF VETERINARY MEDICINE FREE-STANDING SCHOOL AT NEBRASKA



*The Dean of the College of Veterinary Medicine would also serve as Assistant Director of Cooperative Extension and Agriculture Experiment Station for administration of those programs.

**The Advisory Council could be composed of representatives of each of the Old West States to serve in an advisory capacity on matters such as curriculum, admissions, and others.

***Departmental programs of cooperative extension, agriculture experiment station, and resident instruction would relate to the appropriate administrative officer.

Student Admission Procedures

Procedures for student admissions and detailed selection criteria will be determined by an Admissions Committee composed of faculty members representing at least one member from each of the participating universities in the program. Appointment to the committee will be by action of the Advisory Council of the Old West Regional Veterinary Program.

Each participating state in the shared program will have a quota of students in each entering class. The quotas will be determined by the projected veterinary manpower needs, educational demands, and degree of participation desired by each of the respective states. Tentative projections indicate that Nebraska might desire a quota of 35 students, South Dakota 12 students, North Dakota 13 students, and Wyoming 14 students. Representatives of Montana have requested not to be considered as active participants in the initial stages of planning. Depending on the desires of the participating states, these quotas could be reserved for residents of the participating states or contracted to students from other states. Accepting the decision that Montana does not elect to participate on an active basis in the intial stages of the program, that state could enter students in the regional program on a contract basis with the other actively participating units.

Students wishing to enter the veterinary program will be instructed to submit an application to the Director of Admissions at the Institution where they wish to begin their professional education. The Director will review the applications for completion of general university requirements, residency status, cumulative grade point average, and other details that

might be significant to the respective participating institutions. The Director will then forward the applications to the Admissions Committee.

The Admissions Committee of the shared program will review the entire applicant pool and attempt to identify the best qualified individuals for entry into the professional program. Final selection of the entering class will be based upon a summary evaluation of selection criteria established by the Committee. These criteria may include such things as evaluation of performance in preveterinary studies, application form, veterinary medical exposure, evidence of maturity, recommendations and interviews. The final recommendation of students selected for each entering class will be submitted to the Advisory Council and the faculty of the shared program for approval.

Minimum standards for admission will be established by the Admissions Committee. In the event that a state may not have a sufficient number of qualified applicants to fill its quota for a given year, that state would have the option of forfeiting the position(s) to another participating regional state, "selling" the contract(s) to a qualified student(s) from another state, or paying an appropriate fee to the program to assure its continuation of quality and service. The amount of the penalty fee would be negotiated and specified in the "Memorandum of Agreement" drawn between the participating states.

Academic Standards

Assurance of academic standards is a critical part of any educational program. Its administration becomes more difficult when the program is shared between campuses. It is essential to establish standards and evaluation criteria that will assure uniform quality in all segments of the shared program.

It is proposed that the matter of academic standards be handled by a joint faculty committee composed of faculty members from all participating institutions. The charge of this committee will be to define educational objectives for each segment of the professional curriculum and establish evaluation criteria with specified levels of mastery for all students in the professional program.

Considerations for Accreditation of a Regional Program

The Council on Education (COE) of the American Veterinary Medical Association is the accrediting authority for all programs of veterinary medical education in the United States and Canada. The COE has specific guidelines and recommendations regarding the essentials of an acceptable veterinary medical school. In its analysis of a program for accreditation, the group examines organization, finances, physical plant, enrollment, library, admission procedures, faculty, professional curriculum, clinical facilities, teaching aids and continuing education.

The aims and purposes of the Council are to promote active progress in veterinary medical education in the various schools and colleges, with full accreditation of them as the ultimate goal. In fulfilling this function, the Council encourages and assists schools to meet requirements.

Upon request, the Council will consider evaluation of a newly established school at any stage of its development, making accreditation possible after the completion of instruction of the first two professional years.

Accreditation is essential in order to assure quality of a program and to qualify graduates for licensure examination. Also, for all newly developing projects such as the proposed in the Old West Region, a "Statement of Reasonable Assurance of Accreditation" from the COE is essential in order to be eligible to compete for certain federal funds for development of the new program.

The Study Team contracted for the service of a consultant to aid in the considerations of plans for a regional program. The consultant was

Dr. Robert B. Lank, retired Associate Dean of the College of Veterinary Medicine at Louisiana State University and former member of the COE. Dr. Lank provided valuable input and advise on many aspects of the proposed plans. It was his opinion that the organizational structures proposed for the various plans would be appropriate and acceptable. Further, he stated that the concept of utilizing multi-campus sites for delivery of the professional curriculum has precedent in other programs of professional education and is acceptable to the COE.

Estimated Total Construction Costs

With the exception of the continuation of contractual arrangements with existing schools of veterinary medicine, all plans for a regional program for the Old West States would require construction of additional facilities. The amount and type of new facilities that would be required would vary with the type of program that might be adopted.

All institutions have existing facilities for teaching, research, extension and/or diagnostic services. However, those facilities are presently being utilized for on-going programs. Space for new programs of professional education, continuing education, clinical and field services, and additional faculty activities including instruction-related research could be shared to some extent but the space is limited.

The availability of existing space varies in the present institutions of the Old West Region. Some facilities that might be utilized for new programs at North Dakota State University include a lecture-demonstration room and a seminar room. At South Dakota State University, there is a lecture-demonstration room, a small library-reading room, and two seminar rooms that might be utilized. All existing facilities at the University of Wyoming are presently over-crowded and no space is available for new programs.

Some new facilities at the University of Nebraska were recently completed. Several of the present classrooms and laboratories could be shared with new programs in veterinary medicine. These include two classrooms; a teaching laboratory; a diagnostic center including laboratories for diagnostic services for pathology, microbiology and toxicology; some specialty research laboratories including electron microscopy; and quarters for experimental animals.

The potential usage of the above facilities at the various institutions was taken into consideration in projecting needs for new programs.

A consulting architect was contracted to aid the Study Team in the estimation of new facilities requirements and costs. The consultant was Mr. Frederick R. Frank, who presently holds a joint appointment in the College of Veterinary Medicine and the College of Architecture at Mississippi State University. He also operates a firm that serves for veterinary facilities consultants.

Under the direction of the consultant, projections for new facilities requirements were made for each participating institution for four different alternative plans -- Cole Plan, Study Team Plan, Single Campus Regional School in Nebraska, and Free-Standing School in Nebraska. As previously mentioned, the potential sharing of some existing facilities was taken into consideration where available.

For both the Cole Plan and the Study Team Plan, facility needs were estimated for teaching the first year of the professional curriculum at each participating institution plus space for development of continuing education programs and provision of field services capabilities. In addition, facilities projected at UN-L included those necessary to provide years II, III, and IV of the curriculum along with the necessary teaching hospital-clinic.

Plans for a Single Campus Regional School at Nebraska included moderate facilities for development of continuing education programs and field service capabilities at each participating institution plus additional facilities required to teach all years of the professional curriculum at UN-L.

Projected new facilities requirements for a Free-Standing School at Nebraska were limited to those needed at that institution.

A detailed room-by-room "Program of Facilities" for the four plans is included as Appendix C of this report.

The summary of construction costs, site preparation, architectural-engineering fees, equipment and furnishings for each plan at each institution is presented in Tables 3 through 6. A comparison of the total capital cost of the various plans is presented in Table 7.

It is proposed that construction costs be funded by the combination of federal and state sources along with the sale of tax exempt revenue bonds. The bonds would be amortized by charge of "facilities use fees" paid by cooperating states in the program. A discussion of possible funding sources and proposed methods of cost sharing is presented in the following section of this report.

Table 3

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN I - COLE PLAN

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	14,410	15,860	12,910	148,486	191,666
Gross Area S.F.	21,615	23,790	19,365	246,453	311,223
Construction Cost**	$1,621,125	$1,784,250	$1,452,375	$18,483,975	$23,341,725
Sitework	75,000	75,000	75,000	250,000	475,000
Total Construction	$1,696,125	$1,859,250	$1,527,375	$18,733,975	$23,816,725
A/E Fees***	$110,248	$120,850	$100,000	$1,218,000	$1,549,098
Equipment & Furnishings	$215,000	$225,000	$185,000	$2,900,000	$3,525,000
Project Capital Cost	$2,021,373	$2,205,100	$1,812,375	$22,851,975	$28,890,823

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%

**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs

***Estimated Average 6⅔% Fee

Table 4
OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS — PLAN II - STUDY TEAM PLAN

Cost Item \ Location	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	16,120	20,190	14,420	152,436	203,166
Gross Area S.F.	24,180	30,285	21,630	253,043	329,138
Construction Cost**	$1,813,500	$2,271,375	$1,622,250	$18,978,225	$24,685,350
Sitework	100,000	160,000	100,000	250,000	610,000
Total Construction	$1,913,500	$2,431,375	$1,722,250	$19,228,225	$25,295,350
A/E Fees***	$125,000	$158,000	$105,000	$1,250,000	$1,638,000
Equipment & Furnishings	$220,000	$275,000	$200,000	$3,000,000	$3,695,000
Project Capital Cost	$2,258,500	$2,864,375	$2,027,250	$23,478,225	$30,628,350

*Net to Gross Factor - Predominantly Lab/Education Facilitis = 66%
- Predominantly Animal Research = 60%
**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs
***Estimated Average 6½% Fee

Table 5
OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN III A - SINGLE CAMPUS REGIONAL SCHOOL AT NEBRASKA

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	4,970	6,420	3,470	159,156	174,016
Gross Area S.F.	7,455	9,630	5,205	264,198	286,488
Construction Cost**	$559,125	$722,250	$390,375	$19,814,850	$21,486,600
Sitework	60,000	60,000	50,000	250,000	420,000
Total Construction	$619,125	$782,250	$440,375	$20,064,850	$21,906,600
A/E Fees***	$40,300	$50,800	$29,000	$1,304,000	$1,424,100
Equipment & Furnishings	$80,000	$95,000	$60,000	$3,100,000	$3,335,000
Project	$739,425	$928,050	$529,375	$24,468,850	$26,665,700

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%
**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs
***Estimated Average 6½% Fee

Table 6
OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN III B - FREE-STANDING NEBRASKA SCHOOL

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	0	0	0	159,156	159,156
Gross Area S.F.	0	0	0	264,198	264,198
Construction Cost***	0	0	0	$19,814,850	$19,814,850
Sitework	0	0	0	250,000	250,000
Total Construction	0	0	0	$20,064,850	$21,906,600
A/E Fees***	0	0	0	$1,304,000	$1,304,000
Equipment & Furnishings	0	0	0	$3,100,000	$3,100,000
Project Capital Cost	0	0	0	$24,468,850	$24,468,850

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%
**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs
***Estimated Average 6½% Fee

Table 7

COMPARISON OF ESTIMATED CAPITAL COSTS
OF SEVERAL ALTERNATIVES FOR VETERINARY
MEDICAL PROGRAMS IN THE
OLD WEST REGION

	NDSU	U of W	SDSU	UN-L	TOTAL
Cole Plan	$2,021,373	$2,205,100	$1,812,375	$22,851,975	$28,890,823
Study Team Plan	2,258,500	2,864,375	2,027,250	23,475,225	30,628,350
Single Campus Regional School at Nebraska	739,425	928,050	529,375	24,468,850	26,665,700
Free-Standing School at Nebraska	0	0	0	24,468,850	24,468,850
Contracts with Existing Schools	0	0	0	0	0

Possible Funding Sources for Capital Costs

Identification of sources of funds for capital construction is a major point of consideration in the planning of program of the present nature. Several potential sources of funds are possible; however, none are assured.

Federal matching funds, mostly administered through the U.S. Department of Health, Education, and Welfare (DHEW), have been a major source of building funds for veterinary medical programs in the past. The level of matching funds from that source has generally been in the range of 40% to 80%.

Another possible source of federal matching funds is through the U.S.D.A. A bill presently under consideration would provide authorization for facilities grants to assist the development of new programs of veterinary medicine and expansion of existing schools.

Funds from O.W.R.C. may serve as another potential partial funding source for capital construction in the region.

Although federal funds may provide a significant contribution to a building program, there is a requirement for matching funds from the state. It would be necessary for each state to appropriate some funds for facilities that were to be constructed within that state.

The issuance and sale of tax exempt revenue bonds may also be used as a part of the source of funds for facilities.

Total funding of capital costs is most likely to include a combination of federal funds, state appropriations and bonding.

Equitable Sharing of Capital Costs

To provide an equitable distribution of each state's share of capital costs of jointly utilized facilities, it is proposed that each participating state will share in the costs of those facilities in proportion to the number of residents that use the facilities to the total number of students sharing the space. For purposed of further calculations, those proportions can be stated as follows:

	Students in each Class	Total Students in Program	Percent of Total
North Dakota	13	52	17.6
South Dakota	12	48	16.2
Wyoming	14	56	18.9
Nebraska	35	140	47.3
	74	296	100.0

Assuming that 80% of the total construction costs might be available from one or a combination of federal sources (DHEW, USDA, and/or OWRC), a "facilities use charge" can be calculated for each non-resident student utilizing facilities at UN-L.

New facilities at UN-L proposed for the Cole Plan would be jointly utilized during years II, III, and IV of the professional curriculum but not during the first year. Deducting the cost of space to be utilized for the first year from the total yields the amount to be considered for sharing costs. Since 10,520 net square feet (space projected for the first year teaching program) represents 7% of the total projected net footage at UN-L, that amount of the total cost is deducted [$22,851,975 - (.07 x $22,851,975) = $21,252,337]. The assumption was made that 80% of that total was to be provided by federal funding leaving $4,250,467 to be

financed from other sources. Since Nebraska would have 47.3% of the students in the program, a state appropriation would provide for its share (.473 x $4,250,467 = $2,010,471) leaving $2,239,996 to be borne by other users.

It is proposed that the remaining $2,239,996 would be financed through sale of tax exampt revenue bonds. Calculating that $72.65 per year will amortize the principle and interest on each $1,000 at an interest rate of 6% on a 30 year loan, an annual payment of $162,736 would be necessary ($72.65 x 2,239.996 = $162,736). Dividing this amount by the total number of non-resident students using the facilities [(3 x 13) + (3 x 12) + (3 x 14)= 117] yields $1,391 per student as the annual facilities use charge.

If only 60% of the capital costs were provided by federal funds, the use charge could be similarly calculated. The figure in that case would be $2,782 per student per year. Similarly, if only 40% federal funds were available, the use charge would be $4,173.

Using the same method of calculation, the use fee for the Study Team Plan would be $1,383 with 80% federal funding, $2,766 with 60%, and $4,149 with 40%.

Facilities at Nebraska would be jointly utilized for all four years of the professional curriculum for both the Single Campus Regional Plan and the Free-Standing Regional School at Nebraska. Using the same system of calculation, the facilities use fee for both of those plans would be $1,201, $2,402 and $3,603 assuming 80%, 60% and 40% federal funding respectively.

The above figures are provided as estimates and to demonstrate the methodology that could be used to determine equitable sharing of costs between states. Final cost figures might take into consideration other costs or benefits to participating states not accounted for herein.

Estimates of Annual Operating Costs

Calculations of operating costs require the consideration of many factors including personnel requirements, student numbers, curriculum matters, and others. These topics were discussed in earlier sections of this report. However, since these factors relate so closely with estimates of budgets, summaries of student distribution, proposed semester credit hours and new faculty requirements are presented in Tables 8, 9, 10, and 11 for the Cole Plan, Study Team Plan, Single Campus Regional School and Free-Standing School in Nebraska respectively.

Estimates of the total annual operating budgets for each of the above plans were prepared. Those are presented in Tables 12 through 15.

Sources of funding for new programs were outlined for each plan at each institution. Funds that might logically be generated as a direct result of the presence of an educational program were estimated as income and counted as deducts to the total cost of each plan. These included student tuition, educational grants and contracts, and research income.

Deducts for income generated by patient care services were not included because those practices in a teaching environment are not money making ventures. Also, deducts for federal capitation funds were not included because those grants are designated for the expansion and improvement of instruction and are not intended as a replacement for state appropriations. Further, the probability is high that capitation grants will be phased out in the near future.

TABLE 8

SUMMARY OF STUDENT DISTRIBUTION, SEMESTER CREDIT HOURS, AND NEW FACULTY REQUIREMENTS AT EACH PARTICIPATING INSTITUTION

COLE PLAN

		NDSU	SDSU	MSU[1]	UW	UN-L	TOTAL
Student Distribution at each Institution	Yr. I	13	12	0	14	35	74
	Yr. II	0	0	0	0	74	74
	Yr. III	0	0	0	0	74	74
	Yr. IV	0	0	0	0	74	74
	TOTAL	13	12	0	14	257	296
Semester Credit Hours at each Institution	Yr. I	38	38	0	38	38	38[2]
	Yr. II	0	0	0	0	38	38
	Yr. III	0	0	0	0	40	40
	Yr. IV	0	0	0	0	32	32
	TOTAL	38	38	0	38	148	148
New Faculty[3] Required at each Institution (FTE)[4]	Yr. I	3.8	3.8	0	3.8	4.4	15.8
	Yr. II	0	0	0	0	9.4	9.4
	Yr. III	0	0	0	0	9.9	9.9
	Yr. IV	1.0	1.0	0	1.0	24.0	27.0
	Admin.	0.2	0.2	0	0.2	2.0	2.6
	Ed. Res.	0	0	0	0	2.0	2.0
	TOTAL	5.0	5.0	0	5.0	51.7	66.7

1) Representatives of Montana have requested not to be considered as participants in the initial development of the program.

2) Subject matter of the first year of the professional curriculum is duplicated at each of the participating institutions.

3) Faculty requirements for the professional curriculum were determined by calculating that one FTE was needed to teach 10 semester hours per 30 students in year I, II, and III; four clinicians were required for each instructional block in year IV at the "base" teaching hospital-clinic; and one clinician was required for the field services units at the participating institutions. Further, it was assumed that an equal number of faculty would be required for any classes with less than 30 students in year I.

4) Partial FTE designations represent faculty members with other assignments in Agricultural Experiment Station, Cooperative Extension Service or other institutional responsibilities.

TABLE 9

SUMMARY OF STUDENT DISTRIBUTION, SEMESTER CREDIT HOURS,
AND NEW FACULTY REQUIREMENTS AT EACH PARTICIPATING INSTITUTION

STUDY TEAM PLAN

		NDSU	SDSU	MSU[1]	UW	UN-L	TOTAL
Student Distribution at each Institution	Yr. I	13 DVM 11 non-DVM	12 DVM 12 non-DVM	0	14 DVM 16 non-DVM	35 DVM 29 non-DVM	74 DVM 68 non-DVM
	Yr. II	0	0	0	0	74 DVM	74 DVM
	Yr. III	0	0	0	0	74 DVM	74 DVM
	Yr. IV	0	0	0	0	74 DVM	74 DVM
	TOTAL	13 DVM 11 non-DVM	12 DVM 12 non-DVM	0	14 DVM 16 non-DVM	257 DVM 29 non-DVM	296 DVM 68 non-DVM
Semester Credit Hours at each Institution	Yr. I	38	38	0	38	38	38[2]
	Yr. II	0	0	0	0	38	38
	Yr. III	0	0	0	0	40	40
	Yr. IV	0	0	0	0	32	32
	TOTAL	38	38	0	38	148	148
New Faculty[3] Required at each Institution (FTE)[4]	Yr. I	3.8	3.8	0	3.8	8.1	19.5
	Yr. II	0	0	0	0	9.4	9.4
	Yr. III	0	0	0	0	9.9	9.9
	Yr. IV	1.0	1.0	0	1.0	24.0	27.0
	Admin.	0.2	0.2	0	0.2	2.0	2.6
	Ed. Res.	0	0	0	0	2.0	2.0
	TOTAL	5.0	5.0	0	5.0	55.4	70.4

1) Representatives of Montana have requested not to be considered as participants in the initial development of the program.

2) Subject matter of the first year of the professional curriculum is duplicated at each of the participating institutions.

3) Faculty requirements for the professional curriculum were determined by calculating that one FTE was needed to teach 10 semester hours per 30 students in years I, II, & III; four clinicians were required for each instructional block in year IV at the "base" teaching hospital-clinic; and one clinician was required for the field services units at the participating institutions. Further, it was assumed that an equal number of faculty would be required for any classes with less than 30 students in Year I.

4) Partial FTE designations represent faculty members with other assignments in Agricultural Experiment Station, Cooperative Extension Service or other institutional responsibilities.

TABLE 10

SUMMARY OF STUDENT DISTRIBUTION, SEMESTER CREDIT HOURS, AND NEW FACULTY REQUIREMENTS AT EACH PARTICIPATING INSTITUTION

SINGLE CAMPUS REGIONAL SCHOOL

		NDSU	SDSU	MSU[1]	UW	UN-L	TOTAL
Student Distribution at each Institution	Yr. I	0	0	0	0	74	74
	Yr. II	0	0	0	0	74	74
	Yr. III	0	0	0	0	74	74
	Yr. IV	0	0	0	0	74	74
	TOTAL	0	0	0	0	296	296
Semester Credit Hours at each Institution	Yr. I	0	0	0	0	38	38
	Yr. II	0	0	0	0	38	38
	Yr. III	0	0	0	0	40	40
	Yr. IV	0	0	0	0	32	32
	TOTAL	0	0	0	0	148	148
New Faculty[2] Required at each Institution (FTE)[3]	Yr. I	0	0	0	0	9.4	9.4
	Yr. II	0	0	0	0	9.4	9.4
	Yr. III	0	0	0	0	9.9	9.9
	Yr. IV	1.0	1.0	0	1.0	24.0	27.0
	Admin.	0.2	0.2	0	0.2	2.0	2.6
	Ed. Res.	0	0	0	0	2.0	2.0
	TOTAL	1.2	1.2	0	1.2	56.7	60.3

1) Representatives of Montana have requested not to be considered as participants in the initial development of the program.

2) Faculty requirements for the professional curriculum were determined by calculating that one FTE was needed to teach 10 semester hours per 30 students in years I, II and III; four clinicians were required for each instructional block in year IV at the "base" teaching hospital-clinic; and one clinician was required for each field services block at the participating institutions.

3) Partial FTE designations represent faculty members with other assignments in Agricultural Experiment Station, Cooperative Extension Service or other institutional responsibilities.

TABLE 11

SUMMARY OF STUDENT DISTRIBUTION, SEMESTER CREDIT HOURS, AND NEW FACULTY REQUIREMENTS AT EACH PARTICIPATING INSTITUTION

FREE-STANDING SCHOOL IN NEBRASKA

		NDSU	SDSU	MSU[1]	UW	UN-L	TOTAL
Student Distribution at each Institution	Yr. I	0	0	0	0	74	74
	Yr. II	0	0	0	0	74	74
	Yr. III	0	0	0	0	74	74
	Yr. IV	0	0	0	0	74	74
	TOTAL	0	0	0	0	296	296
Semester Credit Hours at each Institution	Yr. I.	0	0	0	0	38	38
	Yr. II	0	0	0	0	38	38
	Yr. III	0	0	0	0	40	40
	Yr. IV	0	0	0	0	32	32
	TOTAL	0	0	0	0	148	148
New Faculty[1] Required at each Institution (FTE)[2]	Yr. I	0	0	0	0	9.4	9.4
	Yr. II	0	0	0	0	9.4	9.4
	Yr. III	0	0	0	0	9.9	9.9
	Yr. IV	0	0	0	0	24.0	24.0
	Admin.	0	0	0	0	2.0	2.0
	Ed. Res.	0	0	0	0	2.0	2.0
	TOTAL	0	0	0	0	56.7	56.7

1) Faculty requirements for the professional curriculum were determined by calculating that one FTE was needed to teach 10 semester hours per 30 students in years I, II, and III; four clinicians were required for each instructional block in year IV at the "base" teaching hospital-clinic.

2) Partial FTE designations represent faculty members with other assignments in Agricultural Experiment Station, Cooperative Extension Service or other institutional responsibilities.

Table 12: ESTIMATED ANNUAL OPERATING BUDGET[1] FOR NEW PROGRAMS PROVIDED AT EACH PARTICIPATING INSTITUTION

	COLE PLAN				
	NDSU	SDSU	U of W	UN-L Yr. I	UN-L Yrs. II, III & IV
Personnel					
Faculty salaries (FTE X $31,116)[2]	$149,357	$149,357	$149,357	$136,910	$1,347,323
Educ. Res. salaries (FTE X $26,000)	---	---	---	---	52,000
Administrative salaries (FTE X $35,783)[3]	7,157	7,157	7,157	7,157	64,409
Tech. & Cler. wages (Total FTE X 1.25 X $10,000)	62,500	62,500	62,500	57,500	588,750
Other employee benefits (13% of salaries & wages)[4]	28,472	28,472	28,472	26,204	266,823
Other Direct Costs					
Equipment (2.5% of initial cost)[5]	5,375	4,625	5,625	15,000	57,500
Teaching supplies (Student FTE X $500)	6,500	6,000	7,000	17,500	111,000
Educ. Res. supplies	---	---	---	---	50,000
Research supplies (Fac. FTE X $1,000)	4,800	4,800	4,800	4,400	43,300
Travel (Total FTE X $500)	2,500	2,500	2,500	2,300	23,550
Miscellaneous (Total FTE X $300)	1,500	1,500	1,500	1,380	14,130
Indirect Costs (12.5% of total direct costs)[6]	33,522	33,364	33,613	33,544	327,348
Total Budget Required for Instructional Programs at Each Institution	$301,701[7]	$300,275[7]	$302,525[7]	$301,895	$2,946,133

TOTAL COST OF PROGRAM $4,152,529

Footnotes for this table are on the following page.

FOOTNOTES FOR TABLE 12

[1]Cost estimates are based on 1977-78 dollars.

[2]Estimated faculty salary was determined by calculating the average 1976-77 faculty salary in existing Colleges of Veterinary Medicine plus an estimated 8% annual increase for the current year plus an additional 10% required to recruit and develop new faculty ($26,192 + $2,095 + $2,829 = $31,116).

[3]Average administrative salary was estimated by adding 15% to the average faculty salary ($31,116 + $4,667 = $35,783).

[4]Rate for other employee benefits is that recommended for UN-L.

[5]Initial equipment costs estimated for capital costs. From Table 3.

[6]Rate for direct costs recommended for programs of this type by the Office of Grants and Contracts, UN-L.

[7]These estimates do not include funds required for support of students in years II, III and IV of the professional curriculum at UN-L.

Table 13: ESTIMATED ANNUAL OPERATING BUDGET[1] FOR NEW PROGRAMS PROVIDED AT EACH PARTICIPATING INSTITUTION

	STUDY TEAM PLAN				
Personnel	NDSU	SDSU	U of W	UN-L Yr. I	UN-L Yrs. II, III & IV
Faculty salaries (FTE X $31,116)[2]	$149,357	$149,357	$149,357	$252,040	$1,347,323
Educ. Res. salaries (FTE X $26,000)	---	---	---	---	52,000
Administrative salaries (FTE X $35,783)[3]	7,157	7,157	7,157	7,157	64,409
Tech. & Cler. wages (Total FTE X 1.25 X $10,000)	62,500	62,500	62,500	103,750	588,750
Other employee benefits (13% of salaries & wages)[4]	28,472	28,472	28,472	47,183	266,823
Other Direct Costs					
Equipment (2.5% of initial cost)[5]	5,500	5,000	6,875	15,625	59,375
Teaching supplies (Student FTE X $500)	12,000	12,000	15,000	32,000	111,000
Educ. Res. supplies	---	---	---	---	50,000
Research supplies (Fac. FTE X $1,000)	4,800	4,800	4,800	8,100	43,300
Travel (Total FTE X $500)	2,500	2,500	2,500	4,150	23,550
Miscellaneous (Total FTE X $300)	1,500	1,500	1,500	2,490	14,130
Indirect Costs (12.5% of total direct costs)[6]	34,223	34,161	34,770	59,062	327,582
Total Budget Required for Instructional Programs at Each Institution[2]	$308,009[7]	$307,447[7]	$312,931[7]	$531,557	$2,948,242

TOTAL COST OF PROGRAM $4,408,186

Footnotes for this table are on the following page.

FOOTNOTES FOR TABLE 13

[1]Cost estimates are based on 1977-78 dollars.

[2]Estimated faculty salary was determined by calculating the average 1976-77 faculty salary in existing Colleges of Veterinary Medicine plus an estimated 8% annual increase for the current year plus an additional 10% required to recruit and develop new faculty ($26,192 + $2,095 + $2,829 = $31,116)

[3]Average administrative salary was estimated by adding 15% to the average faculty salary ($31,116 + $4,667 = $35,783).

[4]Rate for other employee benefits is that recommended for UN-L.

[5]Initial equipment costs estimated for capital costs. From Table 4.

[6]Rate for direct costs recommended for programs of this type by the Office of Grants and Contracts, UN-L.

[7]These estimates do not include funds required for support of students in years II, III and IV of the professional curriculum at UN-L.

Table 14. ESTIMATED ANNUAL OPERATING BUDGET[1] FOR NEW PROGRAMS PROVIDED AT EACH PARTICIPATING INSTITUTION

SINGLE CAMPUS REGIONAL SCHOOL AT NEBRASKA

Personnel	NDSU	SDSU	U of W	UN-L
Faculty salaries (FTE X $31,116)[2]	$31,116	$31,116	$31,116	$1,639,813
Educ. Res. salaries (FTE X $26,000)	---	---	---	52,000
Administrative salaries (FTE X $35,783)[3]	7,157	7,157	7,157	71,566
Tech. & Cler. wages (Total FTE X 1.25 X $10,000)	15,000	15,000	15,000	708,750
Other employee benefits (13% of salaries & wages)[4]	6,925	6,925	6,925	321,377
Other Direct Costs				
Equipment (2.5% of initial cost)[5]	2,000	1,500	2,375	77,500
Teaching supplies (Student FTE X $500)	---	---	---	148,000
Educ. Res. supplies	---	---	---	50,000
Research supplies (Fac. FTE X $1,000)	1,200	1,200	1,200	52,700
Travel (Total FTE X $500)	600	600	600	28,350
Miscellaneous (Total FTE X $300)	360	360	360	17,010
Indirect Costs (12.5% of total direct costs)[6]	8,045	7,982	8,092	395,883
Total Budget Required for Instructional Programs at Each Institution[2]	$74,403[7]	$71,840[7]	$72,825[7]	$3,562,949

TOTAL COST OF PROGRAM $3,780,017

Footnotes for this table are on the following page.

FOOTNOTES FOR TABLE 14

[1]Cost estimates are based on 1977-78 dollars.

[2]Estimated faculty salary was determined by calculating the average 1976-77 faculty salary in existing Colleges of Veterinary Medicine plus an estimated 8% annual increase for the current year plus an additional 10% required to recruit and develop new faculty ($26,192 + $2,095 + $2,829 = $31,116).

[3]Average administrative salary was estimated by adding 15% to the average faculty salary ($31,116 + $4,667 = $35,783).

[4]Rate for other employee benefits is that recommended for UN-L.

[5]Initial equipment costs estimated for capital costs. From Table 5.

[6]Rate for direct costs recommended for programs of this type by the Office of Grants and Contracts, UN-L.

[7]These estimates do not include funds required for support of students in the professional curriculum at UN-L.

Table 15: ESTIMATED ANNUAL OPERATING BUDGET[1] FOR NEW PROGRAMS PROVIDED AT EACH PARTICIPATING INSTITUTION

FREE-STANDING SCHOOL AT NEBRASKA

Personnel	NDSU	SDSU	U of W	UN-L
Faculty salaries (FTE X $31,116)[2]	0	0	0	$1,639,813
Educ. Res. salaries (FTE X $26,000)	0	0	0	52,000
Administrative salaries (FTE X $35,783)[3]	0	0	0	71,566
Tech. & Cler. wages (Total FTE X 1.25 X $10,000)	0	0	0	708,750
Other employee benefits (13% of salaries & wages)[4]	0	0	0	321,377
Other Direct Costs				
Equipment (2.5% of initial cost)[5]	0	0	0	77,500
Teaching supplies (Student FTE X $500)	0	0	0	148,000
Educ. Res. supplies	0	0	0	50,000
Research supplies (Fac. FTE X $1,000)	0	0	0	52,700
Travel (Total FTE X $500)	0	0	0	28,350
Miscellaneous (Total FTE X $300)	0	0	0	17,010
Indirect Costs (12.5% of total direct costs)[6]	0	0	0	395,883
Total Budget Required for Instructional Programs at Each Institution[7]	0	0	0	$3,562,949

TOTAL COST OF PROGRAM $3,562,949

Footnotes for this table are on the following page

FOOTNOTES FOR TABLE 15

[1]Cost estimates are based on 1977-78 dollars.

[2]Estimated faculty salary was determined by calculating the average 1976-77 faculty salary in existing Colleges of Veterinary Medicine plus an estimated 8% annual increase for the current year plus an additional 10% required to recruit and develop new faculty ($26,192 + $2,095 + $2,829 = $31,116).

[3]Average administrative salary was estimated by adding 15% to the average faculty salary ($31,116 + $4,667 = $35,783).

[4]Rate for other employee benefits is that recommended for UN-L.

[5]Initial equipment costs estimated for capital costs. From Table 6.

[6]Rate for direct costs recommended for programs of this type by the Office of Grants and Contracts, UN-L.

Outlines of the sources of funding for the four plans previously mentioned are presented in Tables 16 through 19.

A comparison of the total state appropriations required for support of several alternatives for regional programs, including the costs of contracting with existing schools, is presented in Table 20.

Table 16: SOURCES OF FUNDING

COLE PLAN

	NDSU	SDSU	U of W	UN-L Yr. I	UN-L Yrs. II, III & IV
Student Tuition[1]	$14,300	$13,200	$15,400	$38,500	$244,200
Educational Grants & Contracts[2]	15,600	14,400	16,800	42,000	266,400
Research Income[3]	7,800	7,200	8,400	21,000	133,200
Student Support Fees[4] from Other States	--	--	--	--	1,213,407
State Appropriation for Conduct of Programs at Each Institution	264,001	265,475	261,925	200,395	1,088,940
Total Budget for Conduct of Programs at Each Institution	$301,701	$300,275	$302,525	$301,895	$2,946,147
State Appropriation for Student Support Fees[4] at UN-L	404,469	373,356	435,582	--	--
State Appropriation for Building Use Fee at UN-L[5]	54,249	50,076	58,422	--[6]	--[6]
Total State Appropriation	$722,719	$688,907	$755,929	$1,289,335	

[1]Professional student tuition estimated at $1100 per year based on present tuition for medical and dental students at the University of Nebraska.
[2]Estimated at $1200/student/year.
[3]Estimated at $600/student/year.
[4]Calculated at $10,371/student/year by subtracting the income generated as a result of the educational program for years II, III & IV at UN-L from the total budget required for conduct of the segment of the program and then dividing the sum by the total number of students in that portion of the curriculum.
[5]Estimated at $1391/student/year assuming 80% federal funding of capital costs.
[6]It is proposed that Nebraska appropriate its funds for capital construction at the initiation of the program.

Table 17: SOURCES OF FUNDING

STUDY TEAM PLAN

	NDSU	SDSU	U of W	UN-L Yr. I	UN-L Yrs. II, III & IV
Student Tuition[1]	$21,230	$20,760	$25,800	$56,770	$244,200
Educational Grants & Contracts[2]	28,800	28,800	36,000	76,800	266,400
Research Income[3]	14,400	14,400	18,000	38,400	133,200
Student Support Fees[4] from Other States	--	--	--	--	1,214,460
State Appropriation for Conduct of Programs at Each Institution	243,579	243,487	233,131	359,587	1,089,982
Total Budget for Conduct of Programs at Each Institution	$308,009	$307,447	$312,931	$531,557	$2,948,242
State Appropriation for Student Support Fees[4] at UN-L	404,820	373,680	435,960	--	--
State Appropriation for Building Use Fee at UN-L[5]	53,937	49,788	58,086	--[6]	--[6]
Total State Appropriation	$702,336	$666,955	$727,177	$1,449,569	

[1]Professional student tuition estimated at $1100 per year based on present tuition for medical and dental students at the University of Nebraska. Non-DVM undergraduate and graduate student tuition at UN-L is $630/year.
[2]Estimated at $1200/student/year.
[3]Estimated at $600/student/year.
[4]Calculated at $10,380/student/year by subtracting the income generated as a result of the educational program for years II, III & IV at UN-L from the total budget required for conduct of the segment of the program and then dividing the sum by the total number of students in that portion of the curriculum.
[5]Estimated at $1383/student/year assuming 80% federal funding of capital costs.
[6]It is proposed that Nebraska appropriate its funds for capital construction at the initiation of the program.

Table 18: SOURCES OF FUNDING

SINGLE CAMPUS REGIONAL SCHOOL

	NDSU	SDSU	U of W	UN-L
Student Tuition[1]	--	--	--	$325,600
Educational Grants & Contracts[2]	--	--	--	355,200
Research Income[3]	--	--	--	177,600
Student Support Fees[4] from Other States	--	--	--	1,425,372
State Appropriation for Conduct of Programs at Each Institution	72,403	71,840	72,825	1,279,177
Total Budget for Conduct of Programs at Each Institution	$72,403	$71,840	$72,825	$3,562,949
State Appropriation for Student Support Fees[4] at UN-L	475,124	438,576	511,672	--
State Appropriation for Building Use Fee at UN-L[5]	62,452	57,648	67,256	--[6]
Total State Appropriation	$609,979	$568,064	$651,753	$1,279,177

[1]Professional student tuition estimated at $1100 per year based on present tuition for medical and dental students at the University of Nebraska.
[2]Estimated at $1200/student/year.
[3]Estimated at $600/student/year.
[4]Calculated at $9,137/student/year by subtracting the income generated as a result of the educational program at UN-L from the total budget required for conduct of that segment of the program and then dividing the sum by the total number of students in that portion of the curriculum.
[5]Estimated at $1,201/student/year assuming 80% federal funding of capital costs.
[6]It is proposed that Nebraska appropriate its funds for capital construction at the initiation of the program.

Table 19: SOURCES OF FUNDING

FREE-STANDING SCHOOL AT NEBRASKA

	NDSU	SDSU	U of W	UN-L
Student Tuition[1]	--	--	--	$ 325,600
Educational Grants & Contracts[2]	--	--	--	355,200
Research Income[3]	--	--	--	177,600
Student Support Fees[4] from Other States	--	--	--	1,425,372
State Appropriation for Conduct of Programs at each Institution	--	--	--	1,279,177
Total Budget for Conduct of Programs at each Institution	--	--	--	3,562,949
State Appropriation for Student Support Fees[4] at UN-L	$475,124	$438,576	$511,672	---
State Appropriation for Building Use Fee at UN-L[5]	62,452	57,648	67,257	---[6]
TOTAL State Appropriation	$537,576	$496,224	$578,928	$1,279,177

1) Professional student tuition estimated at $1,100 per year based on present tuition for medical and dental students at the University of Nebraska.

2) Estimated at $1,200/student/year.

3) Estimated at $600/student/year.

4) Calculated at $9,137/student/year by subtracting the income generated as a result of the educational program at UN-L from the total budget required for conduct of that segment of the program and then dividing the sum by the total number of students in that portion of the curriculum.

5) Estimated at $1,201/student/year assuming 80% federal funding of capital costs.

6) It is proposed that Nebraska appropriated its funds for capital construction at the initiation of the program.

Table 20. COMPARISON OF TOTAL STATE APPROPRIATIONS REQUIRED FOR SUPPORT OF SEVERAL ALTERNATIVES FOR VETERINARY MEDICAL PROGRAMS IN THE OLD WEST REGION

	NDSU	SDSU	U of W	UN-L	TOTAL
Cole Plan	$722,719	$688,907	$755,929	$1,289,335	$3,456,890
Study Team Plan	702,336	666,955	727,177	1,449,569	3,546,037
Single Campus Regional School in Nebraska	609,979	568,064	651,753	1,279,177	3,108,973
Free-Standing School at Nebraska	537,576	496,224	578,928	1,279,177	2,891,905
Contracts with Existing Schools[1]	520,000	480,000	560,000	1,400,000	2,960,000

1) In order to make an appropriate comparison of contractual arrangements with the other plans, it it was assumed that the same number of students would be admitted in all plans. The estimated support fee used for existing programs was $10,000/student/year.

Summary and Recommendation

A number of alternatives exist for the development of veterinary education and services for the Old West Region. All have certain advantages and disadvantages.

Unfortunately, the first criterion for examining and selecting alternative choices is often the price tag. However, this method of selection does not always indicate the best buy.

In selecting a plan for further development for the Old West Region, concentration should be placed on what the proposal provides for all states of the region in respect to provisions for improved service to the citizens. A complete program in veterinary medicine should provide much more than educational opportunity. The spin-off of an educational program provides the opportunity for expansion of many animal and public health services that are not otherwise available.

The Study Team does not believe that the present arrangement of contracting for veterinary education with existing schools represents the best long-term arrangement. While it does provide limited educational opportunity for some students, the other benefits are not available.

It is recommended that a program for veterinary medicine within the region be adopted and pursued for further development. An in-region project would provide a better long-term investment and allow an immeasurable economic benefit to the citizens that support the program.

This Section Prepared by the
Academic Advisory Group

Addendum to Summary

The Academic Advisory Group has been closely involved in the activities of the Study Team during the course of the contract and has participated in the review of this final report. The group considers that the Study Team has fulfilled the objectives of the contract and has approved the final report to be submitted to the OWRC.

The Academic Advisory Group commends the Study Team for its diligence and in-depth analysis for the model refinement of alternative plans for veterinary medical education and services for the Old West Region. The group concurs with the recommendation of the Study Team that the present arrangement of contracting for veterinary education with existing schools does not represent the best long-term arrangement for a comprehensive plan for the Region.

It is recommended to the OWRC that a regional plan be set into motion and that it fund a developmental project to move the Region toward a long-range plan to meet the comprehensive needs for veterinary medical education and services. A proposal that represents the best judgment of the Study Team and Academic Advisory Group as to how to proceed in a developmental phase will be submitted separately from this report. The proposal will be submitted to the OWRC by October 15, 1977.

Specific action of the Academic Advisory Group was taken in relation to a consensus ranking of the alternative plans considered by the Study Team. The plan receiving the highest combined ranking was that identified as the Study Team Plan. The advantages of that plan were listed by the Study Team as follows:

--Provides for the development of a true regional program with commitments and responsibilities by several states.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allow all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Compliments and strengthens existing programs in participating states.

--Portions of the necessary faculty and facilities may be presently available on existing campuses.

--Imroves efficiency due to more optimal class sizes.

--Allows utilization of some facilities for veterinary students and other life sciences or animal sciences majors.

--Strengthens current course offerings and programs in life sciences and animal sciences.

--Provides a "reserve" supply of students in the first year of the professional curriculum that could enter into the professional program in the event of dropouts or failures.

Each state's delegation to the Academic Advisory Group provided a relative ranking of its analysis of the desirability of the various plans. The group wishes to have as a matter of record the relative ranking of the five plans, and the results are shown below. A ranking of five was the most desirable with one as the least desirable.

Ranking by the states' delegates on the Academic Adivsory Group

Plan	N.D.	S.D.	NE	MO	WY	TOTAL
Cole	4	1	4	2	3	14
Study Team	5	2	5	3	5	20
Single Campus Regional	3	4	3	4	2	16
Free-Standing College	2	5	2	1	1	11
Contractual	1	3	1	5	4	14

APPENDIX A

Veterinary Medicine

Its Requirements and Responsibilities

VETERINARY MEDICINE

A NATIONAL RESOURCE AND A NATIONAL RESPONSIBILITY

prepared by

THE JOINT COMMITTEE ON VETERINARY EDUCATION

American Veterinary Medical Association

and

Association of American Veterinary Medical Colleges, Inc.

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VETERINARY MEDICINE SERVING THE NATION

The basic concern of veterinary medicine is the protection and improvement of the health and economic welfare of the nation. Embracing medical and scientific knowledge essential to the conquest of disease, the profession safeguards the health and productivity of food-producing livestock, cares for the ills of zoo animals and a growing population of companion animals, protects laboratory animals essential to research, looks after the health of wild animals important in maintaining a desirable ecologic balance, shields the human population from scores of animal diseases that also affect people, and, through research, contributes significantly to the conquest of such major human health problems as cancer and heart disease.

Figure 1

Veterinarians In the United States: Projected Need and Predicted Shortage

Year	U.S. Population[a] (millions)	Veterinarians Available[b]	Projected Requirements[c]	Net Shortage
1975	214.3	29,039	37,502	8,463
1980	227.7	31,961	39,848	7,877
1985	243.0	36,037	43,254	7,217
1990	257.7	40,220	46,644	6,424
1995	272.2	44,013	50,085	6,072
2000	285.0	47,337	53,295	5,958
2005	300.4	49,824	57,076	7,252
2010	317.2	51,404	61,220	9,816
2015	334.0	52,249	65,464	13,215
2020	350.4	52,527	69,730	17,203

A Crisis in Veterinary Education

The expanding role of veterinary medicine in the effort to mitigate society's major health threats and the emerging role of the profession in ecology, space biology, and world food production emphasize an already critical shortage of veterinarians. There are now about 29,000 active veterinarians in the United States. Based on recommendation of the Senate Committee on Government Operations, 40,075 veterinarians will be required to satisfy public need in the United States by 1980. The validity of this estimate has recently been confirmed by an extensive study by a committee of the National Academy of Sciences. Unless enrollment in colleges of veterinary medicine increases substantially, only 32,000 veterinarians will be available in the country in 1980, a projected shortage of about 8,000. Unless at least three new colleges of average size are started by 1977, the gap will not be less than 6,000 and in twenty years the shortage will become more and more serious (Figure 1). The minimum addition of three more schools will ease the problem, but a total of three or four additional colleges will be needed to meet the demand by the year 2000. Therefore, the nation needs six to seven new colleges of veterinary medicine to meet its responsibilities.

a. As of 31 December. These figures assume a fertility rate from 2.23 in 1974 to 2.50 by 1990 (Series D, P-2 report 493, December, 1972) adjusted down to the July, 1974 estimate (P-25 report 542) and then advanced six months to be compatible with the projected supply. This procedure was used since the 12-month moving average shows an increase of net changes in natural citizens (report 542). It does not include about three million people in Puerto Rico and other U.S. possessions needing veterinary services.

b. This assumes that the existing age distribution of graduates continues, 92% of entering classes graduate, standard mortality tables are applicable, .1% drop out of the field each year, and 95% of active veterinarians are available to meet requirements for veterinary services. This is equivalent to saying that in 30 years the typical DVM will work outside the field for 18 months.

A retirement curve was obtained from a negatively skewed Poisson distribution with a mean of 60. Based on this curve, one of every three active veterinarians at age 62, one of every two at age 64 and everyone at age 70 is expected to retire. These and other points for age (a) were computed as:

$$p(R)a = \frac{f(a)}{\sum_{i=a}^{70} f(i)}$$

where:

$f(a) = e^{-b} b^{70-a}/(70-a)!$ $b = 10, a = 24, 25, \ldots 70.$

New schools at Florida and Louisiana are included. The basic algorithm is explained more fully elsewhere (Meeting the Demand for Veterinary Services in 2000 A.D., *The Georgia Veterinarian*, July-August, 1974, Vol. 26, No. 4, W. R. Van Dresser, G. W. McLaughlin, and R. D. Howard, pp. 16-21).

c. In computing the requirements, 17.5 per 100,000 was used for 1980. Beyond 1980, the need was increased .6 per 100,000 per decade. This increase of .6 is attributable to the changes in the content of veterinary medicine and technological developments. This is conservative, given the 1.9 per decade reported by a previous report *(New Horizons for Veterinary Medicine*, National Academy of Sciences, 1971, p. 170).

A Case for Federal Assistance

Classrooms and laboratories are filled to capacity and large numbers of qualified students must be turned away each year. Thirty-two states currently have no college of veterinary medicine. Nineteen colleges in eighteen states will graduate about 1,400 veterinarians in 1975 to serve the nation's needs. While some state governments may be willing to allocate resources to support part of the cost of educating veterinarians in colleges in other states, there are too few spaces available to accommodate sufficient numbers of students. Since the major burden of educating veterinarians for the entire country rests with eighteen states, each of the colleges must be considered a national resource.

In order to help provide the number of veterinarians required, several measures must be taken. There must be an increase in teaching resources, primarily in the form of additional colleges. There must be greater opportunities for developing veterinary medical teachers and investigators to overcome the current national shortage. A continuing system of financial support of students is needed to assure that young people from all walks of life have an opportunity for a veterinary medical education.

A vigorous national assistance program is essential to provide sustained support for veterinary medical education programs to expand facilities and opportunities in veterinary medical education, and to increase the output and improve distribution of veterinarians. Funding for veterinary colleges is so tenuous that loss of present federal programs providing financial assistance, e.g., capitation grants, would almost certainly force a reduction in veterinary college enrollments by 15 to 20 percent. When more than 85 percent of the qualified applicants to veterinary colleges are now denied admission due to too few opportunities, reduction of enrollments would be a particularly untimely and devastating situation. There is a critical need not only to maintain existing support levels, but also to increase federal allocations to veterinary education programs through the expansion of institutional support and special project grant programs.

The nineteen colleges of veterinary medicine and the additional ones being established will be unable to supply the veterinarians needed. Several states have considered establishing new colleges, but have postponed action because of the high cost of building, staffing, and operating a college of veterinary medicine and because of the uncertainty of federal financial support. Under these circumstances, many qualified students, especially those from the thirty-two states lacking a veterinary college, find it difficult, if not impossible, to obtain a veterinary medical education.

PRIVATE COMMUNITY PRACTICE

Over 70% of all professionally active veterinarians in the U.S. are in private practice.

Food Animal Practice

Approximately forty percent of the veterinarians are in practices which provide services to food producing animals. Some of these veterinarians limit their practices to food animal species, but most of them are general practitioners who provide for the health of many kinds of animals: food-producing species such as cattle, swine, sheep, goats, and poultry; horses; companion pet animals ranging from cats, dogs, and birds to exotic pets such as monkeys and snakes; and wild and zoo animals. These veterinarians work to meet increasing demands for protein-rich animal products. They cooperate with state and federal preventive medicine officials in animal disease control and eradication programs, many of which are specifically designed to control diseases such as Brucellosis and tuberculosis which are communicable to man.

Companion Animal Practice

About thirty-two percent of all U.S. veterinarians report their practices limited to companion animals; however, many offer services, especially in an emergency, for food animals and horses. Americans like pet animals and they want them to be healthy.

Increasingly, dogs provide personal and property protection as well as companionship. The house dog or cat has a psychological value which, while not competely understood, is recognized as being of definite importance to maintenance of mental health and well-being, especially for the elderly and those who live alone. Companion animals are also useful in therapy with mentally disturbed patients, particularly children. Thus, the veterinarian engaged in companion animal practice contributes directly to both the physical and mental health of his fellow man.

A number of diseases such as rabies, tuberculosis, salmonellosis, psittacosis, and ringworm are transmissible from dogs, cats, and birds to people. The companion animal veterinarian prevents human infection by controlling these diseases and advising animal owners on precautions to prevent disease transmission to them. Over the years companion animal practitioners have discovered and characterized animal diseases that serve as experimental models for research on diseases of man, e.g., cancer, heart disease, and neurologic disorders.

Limited and Specialty Practice

Veterinarians in specialized practices serve important national needs. Some veterinarians are expert in the care and treatment of unique animals groups – marine animals or fur bearing animals, for example. Others devote their time to providing for the health of wild and zoo animals and many practices are limited to the problems of one species of domestic animals.

A large number of veterinarians have special education and skills and have met rigid standards for certification by national certifying boards to become practicing veterinary specialists: surgeons, ophthalmologists, microbiologists, theriogenologists (specialists in animal reproduction), dermatologists, radiologists, pathologists, cardiologists, neurologists, anesthesiologists, public health veterinarians, preventive medicine veterinarians, internists, laboratory animal medicine veterinarians. Many of these specialists participate in teaching and research programs at veterinary or human medical colleges and in the pharmaceutical industry.

PUBLIC AGENCIES, INSTITUTIONS, AND PROGRAMS SERVED BY VETERINARY MEDICINE

Nearly one-fourth of all veterinarians in the United States are engaged in preventive medical practice, teaching, and research. These men and women perform a wide variety of services critically important to the health and welfare of the nation.

United States Department of Agriculture

Veterinarians in the U.S. Department of Agriculture function in two major areas of preventive medicine. They devise and implement programs to control and eradicate important infectious diseases of livestock, many of which are common to man and other animals. They also perform inspection and surveillance services on foods of animal origin with the objective of protecting people from agents that might be deleterious to health.

Veterinarians have been engaged in the eradication of livestock diseases, including those communicable to man, since 1884. Two diseases of particular public health significance, both targets of joint eradication efforts by the U.S. Department of Agriculture and individual states, are tuberculosis in cattle and brucellosis in cattle and swine. Controlling them not only removed the major sources of human brucellosis and tuberculosis but also eliminated the economic losses suffered by the livestock industry due to these diseases.

Meat inspection and surveillance activities become ever more complex as production technology changes and new diseases appear. While new problems arise, great effort must still be expended to protect people from many long-known zoonoses such as trichinosis, salmonellosis, cysticercosis, and staphyloccocal infections.

United States Department of Health, Education and Welfare

The U.S. Public Health Service has employed veterinarians for many years and in 1947 established the Veterinary Officer Corps in its commissioned officer service. Veterinarians in the National Institutes of Health and other agencies of the department presently occupy key positions in a variety of programs, such as cancer research, laboratory animal medicine, comparative pathology and physiology, epidemiology, infectious disease control, milk and food hygiene, environmental pollution control, and biomedical research.

The Food and Drug Administration employs veterinarians to ascertain that only safe and effective drugs are approved for marketing. If the drugs or feed additives are intended for use in food animals, edible products derived from treated animals must be proved safe for human consumption. Drugs being marketed are under constant surveillance; if there is any indication that a drug is not performing as expected or that it is causing residues in food, appropriate corrective action is taken.

United States Armed Forces

Presently, approximately 750 veterinarians are on active duty in a variety of capacities in the armed services.

Military veterinarians contribute directly to the protection of the general public health through the establishment of minimum standards of sanitation in many thousands of food producing and processing plants throughout this country and the rest of the world. These establishments must comply with military standards of sanitation in order to qualify for government contracts. Hence, quality control and improved sanitary methods have been adopted by a large segment of the domestic and foreign food industries.

Veterinary officers with postdoctoral training serve as vital members of biomedical research teams. Those assigned to centers such as the Walter Reed Institute of Research and the Armed Forces Institute of Pathology are directly concerned with the identification, control, and eradication of major animal diseases transmissible to man. In support of these objectives, veterinarians are engaged in pathologic examinations, research on nutritional diseases, immunopathologic studies, development of new vaccines, studies on the pathogenesis of diseases of laboratory animals, and virus research.

Veterinarians assigned to environmental health laboratories and other environmental control services not only determine the existing levels of pollution of water and air, but also seek more efficient methods of detecting and controlling pollution. Through assignments with the USAF School of Aerospace Medicine and other technologically-oriented laboratories, veterinarians ensure proper care for animals used in military research and development activities.

State and Local Government

Many veterinarians work for state, county and city governments in preventive medical programs of agriculture and health agencies because of their broad knowledge of animal disease control and comparative medicine and the factors governing the relationship between human and animal diseases. In most large cities the veterinary staff has a variety of public health duties: disease control, laboratory diagnosis, setting and enforcement of standards for milk and meat hygiene and sanitation in eating facilities and food processing plants, disease investigation, and elimination of animal-related industrial hazards. Veterinarians in local governments work closely with private practitioners and other health authorities when they encounter epizootics of rabies, tuberculosis, leptospirosis, anthrax, salmonellosis, or psittacosis, all of which may be connected with the processing of animals, wool, hair, dairy products, and fertilizers.

Educational Institutions

For the 1974-75 academic year, the 19 colleges of veterinary medicine in the United States employed 2,322 faculty and enrolled 6,005 veterinary and 1,166 postdoctoral students. In addition, universities also employ veterinarians to teach students in agricultural, biological, and paramedical sciences. Veterinarians are being employed in increasing numbers by medical schools for teaching and research in comparative medicine, pathology, epidemiology, and preventive medicine. In cooperation with land grant universities, some seventy extension veterinarians provide educational programs in preventive medicine for veterinarians, livestock producers and other animal owners.

SPECIAL AREAS IN WHICH VETERINARY SCIENCE CONTRIBUTES TO HUMAN HEALTH AND WELFARE

Research in Comparative Medicine

Biomedical science, ranging from molecular biology to clinical medicine, emcompasses both veterinary and human medicine. Each deals with the principles of health and disease in living systems. Medical pioneer Sir William Osler was indeed correct when, commenting on the relationship between veterinary and human medicine, he said, "There is only one medicine."

Veterinary medicine occupies a particularly advantageous position among the sciences in its ability to make contributions to human medical science. For every disease of man, a similar and sometimes identical disease exists in some animal species. Many of these animal disease models are better suited for study than are the corresponding human diseases. Vital experimental procedures, too dangerous to be performed on humans, may be undertaken jointly by physicians and veterinarians using animals as experimental subjects. Medical schools and hospitals engage veterinarians in teaching and research programs to provide additional strength in comparative medicine.

The widespread use of oral polio vaccines follows a long period of evaluation in animals. Current animal research on the viral transmission of cancer, immunologic diseases, inherited liver disorder, congenital muscular dystrophies, unique infectious diseases such as "slow viruses," and organ transplantation are beginning to yield results significant for humans.

In the context of comparative medicine, several animal diseases are receiving increased attention. Leukemias and lymphosarcomas occur frequently in domestic animals and are similar in nature to corresponding diseases in man. Other forms of cancer common in animals, particularly cats and monkeys, provide excellent opportunities for investigating these diseases with a view toward more effective treatment or prevention of leukemia in humans. Numerous respiratory diseases in animals are very similar to human respiratory diseases; pulmonary emphysema of the horse and infectious pneumonia in swine, cattle, sheep, and dogs resemble respiratory diseases afflicting humans.

Degenerative nervious disorders similar to multiple sclerosis in man are represented in several animal species. Severe immunogenic diseases, particularly in dogs, horses, mink, and mice, provide counterparts to human ailments such as rheumatoid arthritis, kidney disease, lupus, and certain forms of anemia. Arteriosclerosis occurs naturally in swine, pigeons, and cattle, and dissecting aortic aneurysms occur widely in turkeys. Important advances in the understanding of cariovascular disease have resulted from studies of these animal models.

The broad training offered in veterinary medicine, encompassing several animal species, provides a basis for studies in the field of comparative medicine. Full utilization of veterinarians on human health-oriented research teams could shorten materially the search for treatments for many obscure diseases.

Research in Veterinary Medicine

As important as the dramatic contributions of veterinary science in the control of human disease is research in veterinary medicine. In the United States, the losses of livestock and poultry and their products through disease, parasites, and insect pests amount to $3.6 billion annually. More effective disease control procedures are devised through research in order to reduce such losses, to improve the efficiency of livestock production, and to ensure the safety and wholesomeness of foods of animal origin. Thus, veterinary research promotes both human health and a healthy economy.

The veterinary investigator is a key figure in the control of foreign diseases through epizootic prevention, diagnosis, treatment, and eradication. Foreign animal diseases, capable of killing or of reducing drastically the productivity of sizeable animal populations, pose a constant threat to U.S. livestock industries and wildlife populations. In the 1960's, several of the world's most devastating livestock diseases spread for the first time to new regions. Increasing speed and volume of trade and travel aid the spread of animal diseases, making them serious threats in formerly remote regions and in all countries. This is particularly unfortunate as the world's population begins to exceed its food supply. Among the most important "emerging diseases" are foot-and-mouth disease, African swine fever, rinderpest, bovine pleuropneumonia, Venezuelan equine encephalomyelitis, exotic Newcastle disease, and the hemoprotozoal diseases.

In the summer of 1970, an exotic form of Newcastle disease (VVND) was discovered in pet birds in New York. In April 1971, the disease

was found in game birds in Texas, and in September it appeared in the highly concentrated poultry production area of Southern California. Veterinarians in the U.S. Department of Agriculture and the Armed Forces took vigorous steps to eradicate this disease which threatened the very existence of the U.S. poultry industry. Some 18 months later the disease was brought under control in most areas, but in that short time it had cost over $50 million in losses to the economy.

The lack of an effective vaccine against African swine fever, which appeared on the European continent in 1967-68, makes it the most important foreign disease threatening the U.S. swine industry. The demonstrated ability of rinderpest to destroy 80 to 90 percent of exposed susceptible cattle makes it essential that all countries free of the disease remain alert to its potential hazards. The persistence of bovine pleuropneumonia in many African countries is a serious barrier to international trade. Venezuelan equine encephalomyelitis is enzootic in South America, and in 1971 appeared in North American, threatening the U.S. horse industry and posing a new public health problem. The risk is diminished only slightly by the availability of vaccines for the protection of horses and people.

Foot-and-mouth disease imposes a heavy burden on cattle production throughout South America, Africa, Asia, and part of Europe. Devastating epizootics in countries formerly free of it continue to occur. In 1967 and 1968, foot-and-mouth disease in Great Britain resulted in the slaughter of 429,000 head of cattle, sheep, and swine. Foot-and-mouth disease is particularly difficult to control because of the resistance of the virus and the lack of a vaccine which provides enduring immunity against the several strains and many variants of the virus.

The hemoprotozoal diseases, which include trypanosomiasis, piroplamosis, and East Coast fever, continue to handicap or prevent livestock production in vast areas of the world. Although most hemoprotozoal diseases are tropical, they pose a threat wherever their insect vectors could become established, such as the southern part of the United States.

These diseases are only a few of a large group that lurk outside the thin line of inspectors and quarantine facilities at our borders. In view of the economic value of U.S. livestock and its important link with human health, it is vital to the nation that our livestock be protected from foreign diseases; for such protection, the expertise of veterinary researchers and practitioners is mandatory.

Laboratory Animal Medicine

Veterinarians are responsible for the health and care of the many species of animals used in biomedical teaching and research programs. A recent survey made by the National Academy of Sciences-National Research Council revealed that over 38 million rodents, 500,000 cats and dogs, one million birds, and 85,000 subhuman primates are used annually for biomedical research in the United States. Some 730 veterinarians specializing in laboratory animal medicine care for these animals in universities, hospitals, industrial laboratories, government health agencies, military research and development units, feed and food manufacturing firms, animal production enterprises, and public and private research centers.

Knowledge of the health status of laboratory animals is vital to their usefulness in research. To ensure accuracy of results, any possibility that disease may affect the outcome of a research project must be eliminated. Knowledge of animal health is essential in breeding of laboratory animals, selection of animals for research, management of animals while research is in progress, and interpretation of results.

Numerous animal models of human diseases are recognized as more veterinarians become familiar with laboratory animal and human diseases. The discovery that swine, pigeons, and monkeys spontaneously develop atherosclerosis, which adversely affects almost all persons over 40 years of age, has provided a system whereby this condition may be infinitely manipulated for experimental study. The discovery that the patas monkey and the chimpanzee contract a disease identical to human hepatitis should lead to expanded knowledge about this affliction. Because the small South American night monkey and marmoset monkey are susceptible to infection with human vivax and falciparum malaria, they should be of value in elucidating the peculiarities of these scourges.

The Laboratory Animal Welfare Act of 1970 (P.L.-579) requires that most species of animals used in biomedical research be provided health care under the supervision of a veterinarian. This law has increased the demand for veterinarians specializing in laboratory animal medicine.

Environmental Protection

One of the urgent concerns of contemporary man is the deteriorating quality of his environment resulting from pollution of air, water, and the soil with chemical and physical agents, destruction of the landscape, accumulation of solid wastes, and marked

ecologic dislocations. With special training in sanitation, toxicology, and a wide variety of animal systems, veterinarians are uniquely equipped to undertake studies on ecologic balance and species relationships; they are particularly involved in those studies designed to measure the effects of various pollutants on living systems.

Effective disease control in man and domestic animals can only be carried out if all disease susceptible species, including wild animals, are studied. Wild birds may ingest environmental pollutants and often serve as carriers of infectious agents affecting man and domestic animals. Veterinarians are engaged in field and laboratory work dealing with diagnosis and prevention of wildlife disease, both to protect the health of the human and domestic animal populations and to prevent the tragedy of species extinction.

Recognizing the importance of the seas in maintaining ecologic balance and the tremendous potential of the seas for producing food, veterinarians are also engaged in marine biology and disease control in aquatic animals.

The national goal that involves veterinarians in radiation biology is essentially environmental: to protect man and the animals on which he relies from excessive exposure to radiation. Veterinarians and other scientists plan and conduct clinical and experimental radiobiology research, particularly in federal government laboratories. Projects are designed to establish limits and conditions for human exposure to radionuclides, many of which may result from industrial application of nuclear energy. Experiments range from ecosystem studies of radioisotopes to research on the effects of radioactive materials on small and large animal systems, including a few uncommon species particularly suited for cellular and subcellular studies.

The Defense Atomic Support Agency, an arm of the Armed Forces Radiobiology Research Institute, employs military veterinarians to determine the effects of nuclear weapons throughout a full range of exposures. Veterinarians also study the effects of radioactive fallout on livestock and crops. The radiologic monitoring of food, poultry, and livestock by U.S. Department of Agriculture veterinarians is an established procedure for assuring high quality food for human consumption as well as an aid to livestock breeding and feeding programs. The Department of Health, Education, and Welfare, which sponsors graduate training programs in radiation biology, utilizes veterinarians in research and administration. The veterinarian will be increasingly employed in studies of radioisotopes and their movements through ecologic chains involving marine, terrestrial, and avian animals.

Veterinarians using experimental animals have helped in the development of life support systems for the exploration of exotic environments. Military and civilian veterinarians contributed to the success of the space program and have been effective members of research teams evaluating biologic stress due to a wide range of environment factors.

World Food Production

There is a critical world shortage of food, particularly food containing sufficient quantities of high-quality protein. Animals play a unique role in food production. Ruminants can convert forages largely inedible for man to high-quality protein foods. Nearly 60 percent of the world's agricultural land is better suited to forage production than to the production of foods that can be eaten directly by man. Animals also convert large quantities of wastes and by-products to nutritious food. Veterinarians can play a key role in solving the world food supply problem by helping to bring animal diseases under control, for animal diseases limit animal production in nearly every underdeveloped country.

Through programs such as the introduction of new strains and breeds of livestock, poultry, and fish to improve the quantity and quality of food, U.S. veterinarians, through governmental agencies, assist the peoples of other nations. Many U.S. colleges of veterinary medicine and state universities, as well as federal and state agencies, provide assistance to veterinary schools, veterinary research institutions, and government agencies in underdeveloped countries through the U.S. Agency for International Development, private foundations, and the Food and Agriculture Organization and the World Health Organization of the United Nations. There is a critical need to expand such international veterinary activities.

Emergency Medical Service

In times of local emergency or national disaster, from hurricane devastation to total warfare, every person with knowledge or skill in a health field should be utilized to the full extent of his knowledge and capabilities in an appropriate medical or health activity. The veterinarian can, under such circumstances, perform numerous services. On an emergency medical team, the veterinarian is equipped for a)

emergency care and treatment of humans, b) supervision of sanitation and food inspection, and c) food animal protection and treatment among other activities.

In accordance with the American Medical Association's Summary Report on Nation Emergency Care (1959), the veterinarian, as a health professional, can, after adequate preparation and training, undertake "effective live-saving and first-aid measures and perform functions that will assist the medical profession." Such functions are preparation of casualties for treatment by physicians, administration of artificial respiration, cleansing and treatment of wounds, assistance during surgical procedures, and administration of intravenous solutions, blood, and drugs prescribed by physicians. In areas of widespread disaster, a veterinarian can undertake the early management of mass casualties, allowing physicians to offer individual treatment.

Veterinarians, in emergency circumstances, can render first-aid and emergency medical services, furnish medical and surgical supplies, and possibly provide treatment facilities in veterinary hospitals and offices.

Where large concentrations of displaced persons are located, potential health problems exist. The veterinarian can be instrumental in arranging facilities for maximum sanitation. In implementing insect and rodent control, water inspection and treatment, and proper waste disposal, the veterinarian can help prevent the spread of human disease agents.

A basic responsibility of the veterinarian is to safeguard human health by protecting livestock and animal products from contamination. Animal care during emergencies is indirectly a service to humans. When it is possible to foresee impending disaster, veterinarians can oversee arrangements for animal shelter and protection of feed and water supplies for food-producing species. After disaster strikes, veterinarians can supervise the management of healthy animals and the treatment of animal casualties. In cases of serious damage to food animals and food supplies, veterinarians can be expected to examine foods, to release wholesome, safe foods for distribution, and to arrange for the destruction of contaminated food products.

Service through Primary Health Care Centers

Improvement in the distribution and delivery of medical services to the citizenry is a priority item among national concerns. An attempt is being made to reach areas with inadequate medical facilities and personnel through centrally-located primary health care facilities offering a wide range of medical services to a broad segment of the population. Such a facility provides for physician services, in-patient and out-patient hospital services, emergency services, mental health services, medical treatment and referral services, laboratory services, home health services, and preventive health services.

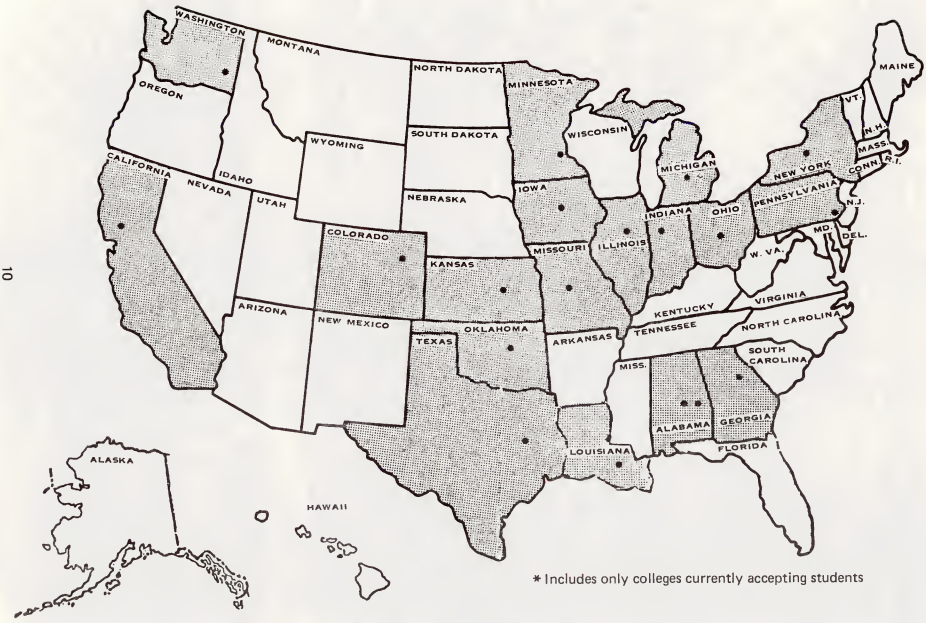
As a member of the professional staff operating through such a primary health care center, the veterinarian can offer a range of unique services. He can participate directly on an emergency medical team should the need arise. Through such a facility, the veterinarian can reach a large segment of the public, dispensing information on the nature and treatment of animal diseases. In the event of discovery of disease agents borne by animals and animal products, the veterinarian can work with personnel in human medicine to prevent the spread of disease. Through the primary medical care center, the role of the veterinarian can be flexible and far-reaching, capitalizing upon the veterinarian's expertise in any of the many areas in which animal and human health bear upon one another.

THE NEED FOR FINANCIAL SUPPORT FOR VETERINARY MEDICINE

Americans depend upon the services of veterinarians in the local community and at the national level, services as direct as treatment of a companion animal and as far-reaching as formulation of public health policy. Foreign nations look to American veterinarians and veterinary medical institutions for assistance in combating animal diseases and chronic food shortages. Veterinary medical educational institutions in the United States are already so strained that they cannot supply the trained personnel needed today, much less the increasing numbers required as the demand for veterinary manpower grows. The need for financial support is immediate — financial support not only to preserve, but also to expand and enhance veterinary education and services for the benefit of the public health and welfare.

Fig. 2

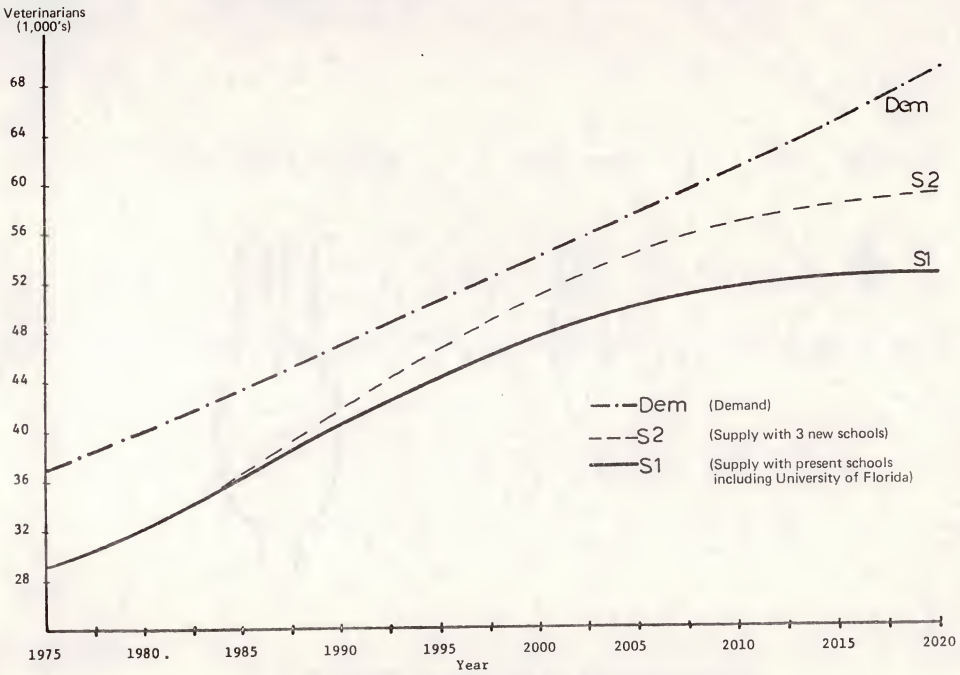
LOCATION OF COLLEGES OF VETERINARY MEDICINE *



* Includes only colleges currently accepting students

Fig. 3

VETERINARY MEDICAL MANPOWER REQUIREMENTS



Supply and Demand of Veterinarians thru 2020

Fig. 4

PROFESSIONAL ACTIVITIES OF VETERINARIANS

PRIVATE COMMUNITY PRACTICE

PUBLIC SERVICE

OTHER

APPENDIX B

THE UNIVERSITY OF NEBRASKA–LINCOLN
LINCOLN, NEBRASKA 68583

Reply to:
101 Veterinary Science
East Campus

Institute of Agriculture and Natural Resources

TO: OWRC Academic Advisory Group

FROM: OWRC Study Team:
M. F. Andrews, North Dakota State University
J. E. Cattin, Montana State University
E. O. Dickinson, University of Nebraska - Lincoln
J. O. Tucker, University of Wyoming
M. W. Vorhies, South Dakota State University
R. G. White, University of Nebraska - North Platte

DATE: May 10, 1977

SUBJECT: Alternative Plans for Veterinary Medicine in the Old West Region

Attached are descriptions of several alternative plans for a program for veterinary medicine in the Old West Region. These proposed alternatives were prepared by the OWRC Study Team for discussion and recommendations by the OWRC Academic Advisory Group at their meeting scheduled for May 17, 1977 in Brookings, South Dakota.

Modified WAMI (Cole) Plan

The plan presented by Dr. Clarence Cole for the development of a veterinary educational program in the Old West Region provided that the first year of the professional curriculum would be offered by each of the departments of the veterinary science at the five land grant universities in the region. After the first year of the curriculum, all students would complete their training at a "central" or "base" teaching facility provided at the University of Nebraska at Lincoln. The plan proposed by Dr. Cole was evidently adopted from the Washington-Alaska-Montana-Idaho (WAMI) program for regional medical education in the Northwest states. The only essential difference between the WAMI program and that proposed by Dr. Cole was that the former was started with an existing school at the University of Washington in Seattle, whereas Dr. Cole's plan proposed a new school of veterinary medicine at the University of Nebraska at Lincoln to serve as the central school of the regional program.

A modification of the WAMI (Cole) plan was prepared for discussion by the OWRC Academic Advisory Group. The modified plan provides for the active participation of North Dakota, South Dakota, and Nebraska in the initial stages of the program with Montana, Wyoming and other states having the option to participate on a contractual basis. Considerations for an optional future active participation by Montana and Wyoming were also made. A diagramatic presentation of the modified WAMI (Cole) plan is presented in Figure 1.

The OWRC study team considered the following advantages and disadvantages of this plan.

Advantages

--Provides for the development of a true regional program with commitments and responsibilities by several states.

--Improves the opportunity for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Compliments and strengthens existing programs of participating states.

--Portions of the necessary resources (faculty & facilities) may be presently available on existing campuses.

Disadvantages

--Requires some duplication of programs (first year of the professional curriculum) in all participating states.

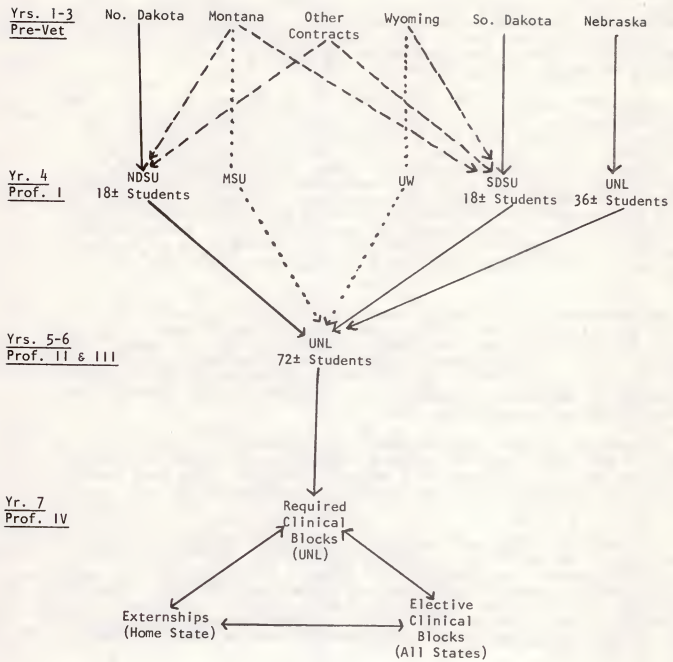
--Minimal class sizes at some institutions reduces efficiency.

--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Provides only one year of residency in the home state during professional training (except at Nebraska).

Figure 1.

Modified WAMI (Cole) Plan*



* The Cole plan was a modification of the Washington-Alaska-Montana-Idaho (WAMI) plan for regional medical education. The only essential difference was the WAMI plan was initiated with an existing "base" whereas Cole's plan proposed a new school to serve as the base.

--- Indicates optional participation on a contract basis.
... Indicates optional future participation on an active basis.

Modified Kavanaugh Plan

A revised system for the delivery and management of the professional veterinary curriculum was recently described by Kavanaugh (J.F. Kavanaugh: A Three Step Approach to Veterinary Medical Education. Jour. Vet. Med. Ed. 3, 1976). This system proposed three distinct phases to the veterinary medical education program with two selection procedures within the system--one between stages 1 and 2, and the second selection between stages 2 and 3.

Stage 1 of Kavanaugh's proposal provided for the traditional preveterinary requirements that may be provided at most institutions of higher learning. The requirements during this stage are, generally speaking, those courses required to meet general university requirements plus strong emphasis in course work in the biological and physical sciences. Upon completion of the requirements for stage 1, students would be eligible for admission into stage 2. This stage would be offered at four-year colleges of agriculture and the program would be required to meet AVMA accreditation standards. Admission to this stage would be selective and students would be admitted with the understanding that some would proceed beyond stage 2 to further study in the professional veterinary curriculum whereas others would receive Bachelor of Science degree and enter into employment or graduate studies.

Subject material offered during stage 2 would include those courses generally covered during the first year of the professional veterinary curriculum, i.e., anatomy, physiology, histology, embryology, biochemistry, and microbiology. In addition, courses in animal husbandry, animal nutrition, animal management, and others would be provided. This combination of courses would represent appropriate preparation for employment or graduate study in a number of animal and biological sciences as well as veterinary medicine.

Approximately one-half of the students that had completed stage 2 would be identified by a second selection procedure to enter into the third stage of the veterinary curriculum. The emphasis during this final three years would be based on studies of applied basic sciences, pathology, clinical sciences, and clinical training experiences.

A modification of the Kavanaugh proposal was prepared to serve as a possible alternative plan for veterinary education and services in the Old West Region. That plan is diagramatically illustrated in Figure 2. The modified Kavanaugh plan provides that North Dakota, South Dakota, and Nebraska will offer phase 2 of the Kavanaugh plan at each of the Colleges of Agriculture at the respective land grant institutions. Upon completion of phase 2, all students continuing in the D.V.M. instructional program would be trained at the base school at the University of Nebraska at Lincoln.

Advantages

--Provides for the development of a true regional program.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Improves efficiency due to more optimal class sizes.

--Allows the possibility of student selection with a greater probability of success in the continuation of the professional program.

--Provides a more complete veterinary education due to increased length and strength of the professional training period.

--Allows utilization of the same facilities for veterinary students and other life sciences or animal sciences majors.

--Strengthens the current course offerings and programs in life sciences and animal sciences.

--Portions of the necessary resources (faculty & facilities) may be presently available on an existing campuses.

Disadvantages

--Requires some duplication of programs in all participating states.

--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Presents difficulties for entrance of contract students from other states into the program, i.e., in order to enter on the same basis as students from home (receiving) states, the sending states would be required to contract for twice the number of students to enter into phase 2 of the program that would be expected to complete the veterinary curriculum.

--The two stage selection process would be traumatic to some students.

--Administration problems would be compounded due to the need to correlate programs between several colleges of veterinary medicine, agriculture and life sciences.

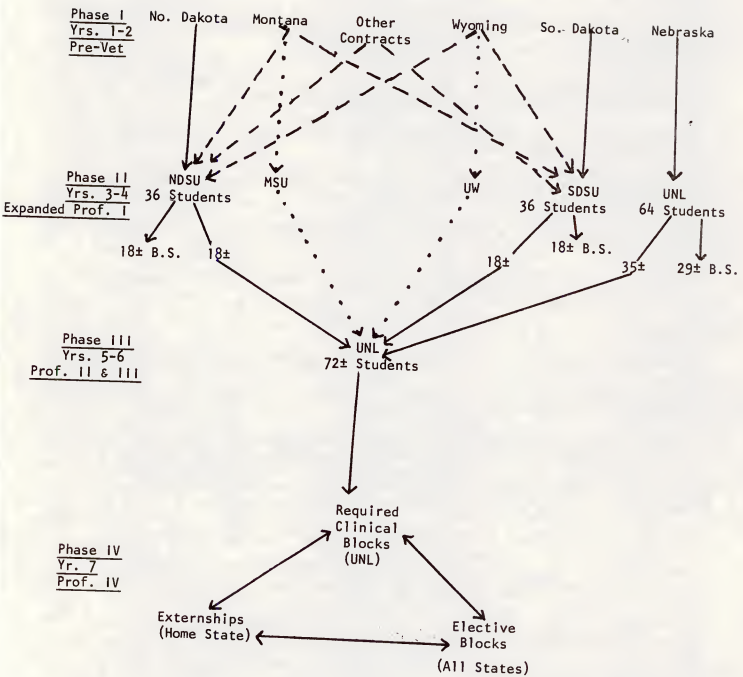
--Accreditation problems may arise because it is an untried system.

--It may produce increased numbers of graduates in programs that are already in plentiful supply.

--Would require an extra year in the professional program.

Figure 2.

Modified Kavanaugh Plan



--- Indicates optional participation on a contract basis.
... Indicates optional future participation on an active basis.

2 X 2 Plan

Another proposal provided as a plan for discussion is known as the "2 X 2 Plan". This proposal provides that the first two years of the professional curriculum will be offered at either North Dakota State University or South Dakota State University, and the last two years at the University of Nebraska at Lincoln. All students selected for the professional curriculum would pursue the first two years of studies at either NDSU or SDSU. Nebraska would not offer the first portions of the curriculum. Other states could participate on a contractual basis or enter into active participation at a later date. This plan is diagramatically illustrated in Figure 3.

Advantages

--Provides for the development of a true regional program.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Provides a program that requires an investment in facilities and operating budget that roughly equates to each state's quota of students in the program, thereby essentially balancing costs and retaining funds in participating states.

--New construction requirements in Nebraska would be reduced.

--Improves efficiency due to more optimal class sizes.

--Compliments and strengthens existing programs of participating states.

--Portions of the necessary resources (faculty & facilities) may be presently available on some existing campuses.

--Provides a program that requires dependence on other states, i.e., creates "equal partners".

Disadvantages

--Requires some duplication of programs in participating states.

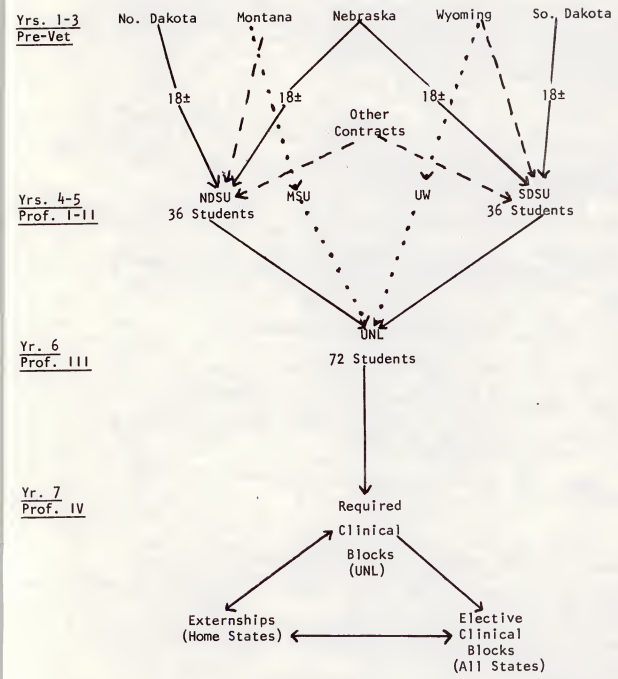
--Separates the entire preclinical faculty and students from an active clinical teaching program.

--Requires more movement of students (two major moves by Nebraska students) during the professional program.

--Provides no "complete" program in any one of the regional states.

Figure 3.

2 x 2 Plan



--- Indicates optional participation on contract basis.
··· Indicates optional future participation on an active basis.

1 X 1 X 2 Plan with United Preclinical Classes

This proposal presents a plan whereby components of the professional curriculum would be provided in three separate states with no duplication of program between any states. The first year of the curriculum would be provided by one state, the second year by another, and the third and fourth years by a third state. It is proposed that either North Dakota or South Dakota would provide the first year with the reciprocal state providing the second year and Nebraska providing years three and four. Montana, Wyoming, and other states would have the option to participate on a contractual basis. This plan is outlined in Figure 4.

Advantages

--Provides for the development of a true regional program.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Provides a program that requires an investment in facilities and operating budget that roughly equates to each state's quota of students in the program, thereby essentially balancing costs and retaining funds in participating states.

--New construction requirements in Nebraska would be reduced.

--Compliments and strengthens existing programs of participating states.

--Portions of the necessary resources (faculty & facilities) may be presently available on some existing campuses.

--Requires no duplication of programs of facilities in any participating state.

--Improves efficiency due to more optimal class sizes.

--Provides a program that requires dependence on other states, i.e., creates "equal partners".

--Preclinical and clinical programs of study would be identical for all students.

--Centers of excellence in specialty areas could be developed.

Disadvantages

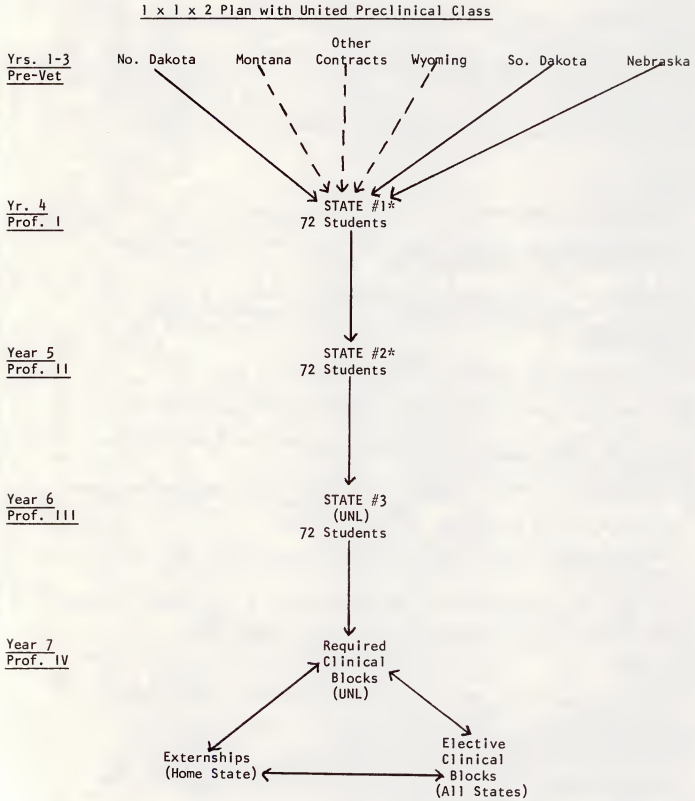
--Physically separates several components of the professional curriculum.

--Requires considerable movements of students (2 or 3 major moves by all students) during the professional curriculum.

--Makes it very difficult for other states to enter into the program except on a contractual basis.

--Provides no "complete" program in any one of the regional states.

Figure 4.



--- Indicates optional participation on a contract basis.

* The first year of the professional curriculum would be provided by either North Dakota or South Dakota and the second year by the reciprocal state.

1 X 1 X 2 Plan with Divided Preclinical Class

This plan proposes that the first two years of the professional curriculum will be provided at different sites. One group of students (approximately half of the total class) would be started in the first year of the professional curriculum at either NDSU or SDSU, and that group would obtain the second year at the reciprocal institution. The other one-half of the class would receive the first two years of the professional curriculum at the University of Nebraska. Years three and four of the professional curriculum would be provided at the base school at UNL. Other states could participate on an optional contractual basis. Montana and Wyoming could enter the program as active participants at a later date; however, if they were to participate of the same basis as the others, this would require considerable correlation on the part of the two states. This proposed plan is outlined in Figure 5.

Advantages

--Provides for the development of a true regional program.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis, however, it would require close coordination between Wyoming and Montana for future entry unless one or the other entered alone and provided the total first two years of the curriculum.

--Helps minimize transfer of the funds across state lines.

--Provides for class sizes that are economically efficient.

--Minimizes duplication except at Nebraska.

--Centers of excellence in some specialty areas could be developed.

--Compliments and strengthens existing programs of participating states.

--Portions of necessary resources (faculty & facilities) may be presently available on existing campuses.

Disadvantages

--Requires some duplication of programs in participating states.

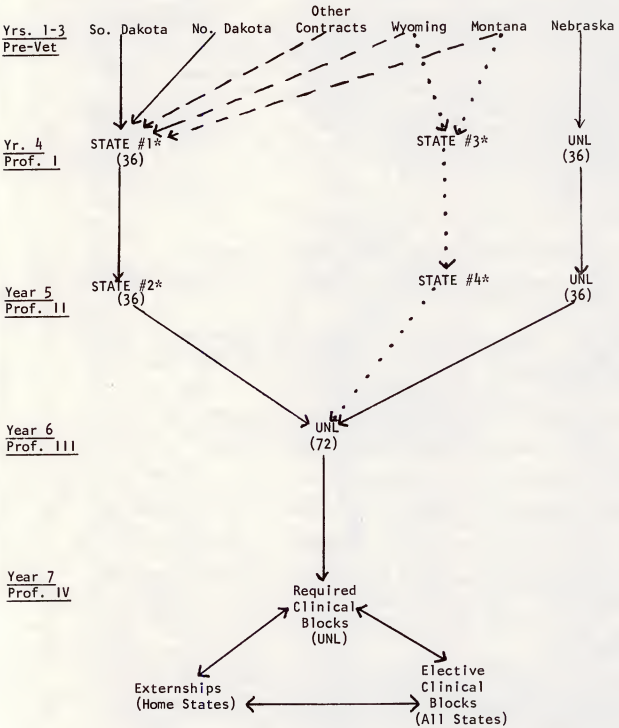
--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Requires considerable movement of some students (two or three major moves for some students but none for others).

--Makes future entry for Wyoming and Montana relatively difficult.

Figure 5.

1 x 1 x 2 Plan with Divided Preclinical Class



* In states other than Nebraska the first year of the professional curriculum would be provided by one participating state and the second year by a reciprocal.

--- Indicates optional participation on a contract basis.

··· Indicates optional future participation on an active basis.

New Veterinary School in Nebraska with Guaranteed Contracts to Other Four States

As directed in the program objectives defined for the OWRC Study Team in the current project, the feasibility of establishing a new school of veterinary medicine in Nebraska with quaranteed contracts to the other four regional states is presented for discussion. This plan is outlined in Figure 6.

Advantages

--Relatively simple to administer.

--Requires no investment in facilities by states other than Nebraska.

--Requires no long term commitments by states other than Nebraska.

--Improves educational opportunity for students in the region.

--Requires minimal movement of students in the professional program.

--Requires no duplication of programs.

--Offers the entire program at one site with no separation of the preclinical and clinical curriculum.

--Provides great strength for veterinary medicine in Nebraska (but limited strength to other areas of the region).

Disadvantages

--Does not provide for the development of a truly regional program in veterinary medicine.

--Requires transfer of considerable funds for operating costs and building use fees across state lines.

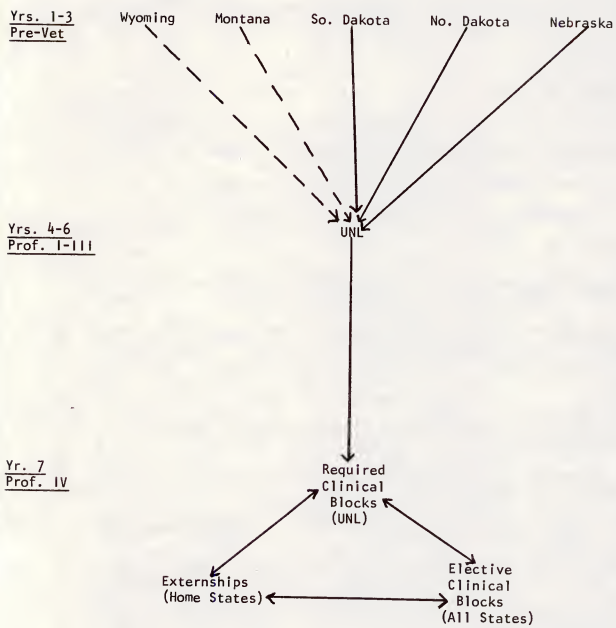
--Limits the opportunities for improvement of veterinary and other health services in states other than Nebraska.

--Provides limited augmentation of other institutional programs in sending states.

--Fails to adequately utilize the potentially available resources in some states.

Figure 6.

New Veterinary School in Nebraska
with Guaranteed Contracts to
Other Four States



OWRC Study Team Plan

A proposal that combines several features of other plans has been developed and is presented as the "OWRC Study Team Plan". This proposal combines features that are found in the WAMI (Cole) Plan and the Kavanaugh Plan discussed earlier. An outline of the plan is presented in Figure 7.

The OWRC Study Team Plan provides that the first year of the professional curriculum would be offered at North Dakota State University, South Dakota State University, and University of Nebraska at Lincoln in the initial stages of the regional program. Classes at each of these institutions would be composed of D.V.M. candidates plus approximately equal numbers of bachelor or masters degree candidates. After the first year of the professional curriculum, all D.V.M. candidates would proceed to the last three years of the curriculum at the base school at UNL. Those students that participated as bachelor or masters students would enter the employment market or continue graduate studies in a related field.

Montana, Wyoming and other states could participate in this program on a contractual basis or would have the option to participate on an active basis in the same manner as the other states.

Advantages

--Provides to the development of a true regional program with commitments and responsibilities by several states.

--Improves opportunities for veterinary education, veterinary services, and economic development of the region.

--Allows all states to participate on either a contractual or active basis.

--Helps minimize transfer of funds across state lines.

--Requires minimal movement of students.

--Compliments and strengthens existing programs in participating states.

--Portions of the necessary (faculty & facilities) may be presently available on existing campuses.

--Improves efficiency due to more optimal class sizes.

--Allows utilization of some facilities for veterinary students and other life sciences or animal sciences majors.

--Strengthens current course offerings and programs in life sciences and animal sciences.

--Provides a "reserve" supply of students in the first year of the professional curriculum that could enter into the professional program in the event of drop-outs or failures.

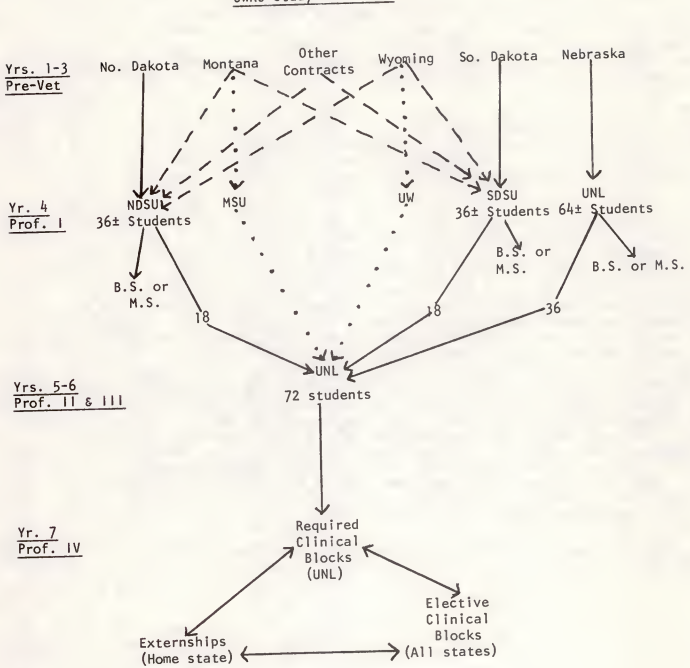
Disadvantages

--Requires some duplication of programs (first year of professional curriculum) in all participating states.

--Separates part of the preclinical faculty and students from an active clinical teaching program (except at Nebraska).

--Provides only one year of residence in the home state during professional training (except at Nebraska).

Figure 7.



--- Indicates optional participation on a contract basis.
··· Indicates optional future participation on an active basis

Proposed Block Scheduling for the Fourth Year of the Professional Curriculum

During the fourth year of the professional curriculum, regardless of the type of plan that might be adopted and developed as a regional program, it is proposed that a curriculum design be adopted that will utilize the block scheduling concept for the provision of clinical instruction. This type of curriculum design has been adopted by several existing veterinary schools and is being utilized with considerable success.

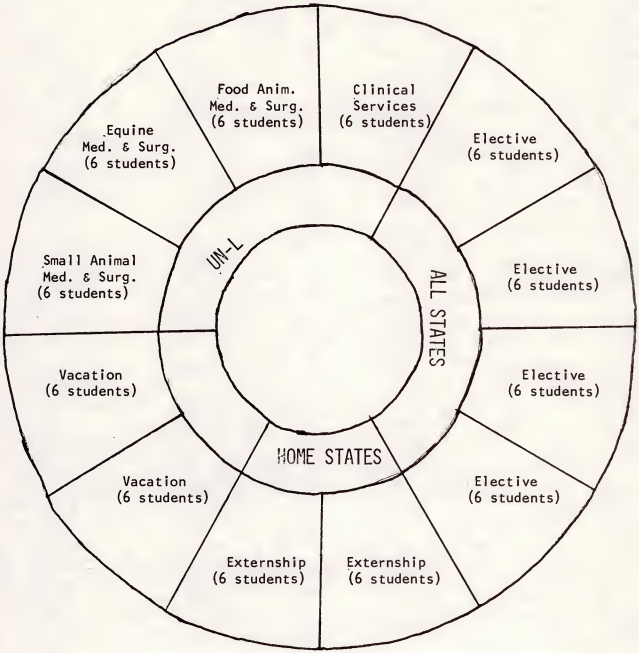
The block scheduling plan requires a deviation from the traditional university calendar. The final year of study is divided into 12 one-month segments and instruction is scheduled so that students spend all day, every day for the one-month period in a clinical subject area. These educational experiences provide for concentrated, in-depth study and practical exercises in clinical subjects.

It is proposed that ten blocks will be required for graduation. Four of these blocks would be required of all students and would be offered at the teaching hospital-clinic provided at UNL. The subject areas for the four required blocks would be Food Animal Medicine & Surgery, Equine Medicine & Surgery, Small Animal Medicine & Surgery, and Clinical Services. Students would also be required to schedule four elective blocks that would be selected to strengthen the career objectives of the individual student. These elective blocks would be developed and delivered in all of the participating states with the intention that the strengths and resources of the states would be maximally utilized. Examples of elective blocks that might be developed include a block in Obstetrics & Theriogenology provided in cooperation with the Meat Animal Research Center at Clay Center, Nebraska or a Herd Health Block in Food Animal Medicine provided at the University of Nebraska, North Platte Station at North Platte, Nebraska. Similar blocks utilizing existing resources could be developed in all of the participating states. An additional two months of externship experiences would be required for all students. A further requirement for these externships would be that they must be served in the student's home state. The other two months of the twelve-month period may be scheduled as vacation time for the students.

A diagramatic representation of the block scheduling plan is presented in Figure 8.

Figure 8.

Proposed Block Scheduling for the Fourth Year of the Professional Curriculum



Each block = one month of full time activity.
Blocks required for graduation:
Four required blocks provided at teaching hospital-clinic at UNL
Four elective blocks provided by any of the participating states.
Two externships served in each student's home state.

APPENDIX C

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

PROGRAM OF FACILITIES — PLAN I: MODIFIED WAMI (COLE) PLAN

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
A. Facilities Located at NORTH DAKOTA STATE UNIVERSITY, Fargo, North Dakota			
1. Educational Resources Center			
4th Yr. Multidisciplinary Lab (15)	1	1880	1880
MDL Support Laboratory	1	750	750
MDL Special Support Laboratory	2	150	300
MDL Preparation Room	1	150	150
MDL Animal Room	1	320	320
MDL Incubator	1	100	100
MDL Cold Room	1	320	320
MDL Educational Aids Storage	1	150	150
Student Locker Rooms, Female	1	150	150
Student Locker Rooms, Male	1	150	150
Volatiles Storage	1	100	100
General Storage	1	150	150
MDL Supervision Office	1	120	120
Resources Center/Library	1	1200	1200
Autotutorial/AV Center	1	750	750
Seminar Rooms	1	300	300
			6890
2. Faculty Office/Research Center			
Center Directors Office	1	150	150
Faculty Offices	3	120	360
Secretarial Office (3)	1	350	350
Post Graduate Offices	2	100	200
Duplicating/Storage	1	120	120
Commons	1	240	240
Research Laboratories	3	360	1080
Isotope Lab	1	180	180
Chromatography Lab	1	120	120
Cold Room	1	120	120
Central Equipment	1	400	400
Dark Room	1	80	80
Central Processing	1	300	300
General Storage	1	200	200
Animal Rooms	2	360	720
Continuing Education Office	1	150	150
Secretary	1	120	120
Men	1	150	150
Women	1	150	150
			5190

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F.S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2330
4. Diagnostic Services			
TOTAL FACILITIES AT NDSU			14,410
B. Facilities Located at UNIVERSITY OF WYOMING, Laramie, Wyoming			
1. Educational Resources Center			
4th Yr. Multidisciplinary Lab (15)	1	1880	1880
MDL Support Laboratory	1	750	750
MDL Special Support Laboratory	2	150	300
MDL Preparation Room	1	150	150
MDL Animal Room	1	320	320
MDL Incubator	1	100	100
MDL Cold Room	1	320	320
MDL Educational Aids Storage	1	150	150
Student Locker Rooms, Female	1	150	150
Student Locker Rooms, Male	1	150	150
Volatiles Storage	1	100	100
General Storage	1	150	150
MDL Supervision Office	1	120	120
Lecture/Demonstration (40)	1	1000	1000
Demonstration Preparation	1	150	150
Resources Center/Library	1	1200	1200
Autotutorial/AV Center	1	750	750
Seminar Rooms	2	300	600
			8340
2. Faculty Office/Research Center			
Center Directors Office	1	150	150
Faculty Offices	3	120	360
Secretarial Office (3)	1	350	350

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
2. Faculty Office/Research Center (contd)			
Post Graduate Offices	2	100	200
Duplicating/Storage	1	120	120
Commons	1	240	240
Research Laboratories	3	360	1080
Isotope Lab	1	180	180
Chromatography Lab	1	120	120
Cold Room	1	120	120
Central Equipment	1	400	400
Dark Room	1	80	80
Central Processing	1	300	300
General Storage	1	200	200
Animal Rooms	2	360	720
Continuing Education Office	1	150	150
Secretary	1	120	120
Men	1	150	150
Women	1	150	150
			5190
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F.S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2330
4. Diagnostic Services			
TOTAL FACILITIES AT UW			15,860
C. Facilities Located at SOUTH DAKOTA STATE UNIVERSITY, Brookings, South Dakota			
1. Educational Resources Center			
4th Yr. Multidisciplinary Lab (15)	1	1880	1880
MDL Support Laboratory	1	750	750
MDL Special Support Laboratory	2	150	300
MDL Preparation Room	1	150	150
MDL Animal Room	1	320	320

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
1.	Educational Resources Center (contd)			
	MDL Incubator	1	100	100
	MDL Cold Room	1	320	320
	MDL Educational Aids Storage	1	150	150
	Student Locker Rooms, Female	1	150	150
	Student Locker Rooms, Male	1	150	150
	Volatiles Storage	1	100	100
	Central Storage	1	150	150
	MDL Supervision Office	1	120	120
	~~Resources Center/Library~~	~~1~~	~~1200~~	~~1200~~
	Autotutorial/AV Center	1	750	750
				5390
2.	Faculty Office/Research Center			
	Center Directors Office	1	150	150
	Faculty Offices	3	120	360
	Secretarial Office (2)	1	350	350
	Post Graduate Offices	2	100	200
	Duplicating Storage	1	120	120
	Commons	1	240	240
	Research Laboratories	3	360	1080
	Isotope Lab	1	180	180
	Chromatography Lab	1	120	120
	Cold Room	1	120	120
	Central Equipment	1	400	400
	Dark Room	1	80	80
	Central Processing	1	300	300
	General Storage	1	200	200
	Animal Rooms	2	360	720
	Continuing Education Office	1	150	150
	Secretary	1	120	120
	Men	1	150	150
	Women	1	150	150
				5190
3.	Field Services			
	Vehicle Storage	2	280	560
	Breakdown Area	1	120	120
	Equipment Room	1	120	120
	Medicine Room	1	80	80
	Processing Lab	1	80	80
	Mud Room/Lockers	1	300	300
	F.S. Office	1	150	150
	Student Call Rooms	6	80	480
	Study Room	1	180	180
	Bath	2	70	140
	Kitchenette	1	120	120
				2330

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
4. Diagnostic Services			
TOTAL FACILITIES AT SDSU			12,910
D. Facilities Located at UNIVERSITY OF NEBRASKA, Lincoln, Nebraska			
1. Administration			
Office of the Dean	1	280	280
Associate Dean	1	250	250
Conference	1	375	375
Secretary/Waiting	1	400	400
Business Manager	1	150	150
Secretary/Waiting	1	150	150
Records	1	500	500
Storage	1	120	120
Men	1	25	25
Women	1	25	25
			2275
2. Educational Resources and Continuing Education Center			
Director's Office	1	120	120
Media Coordinator	1	120	120
Secretary/Waiting	1	240	240
Study Cubicles and Carrels	1	350	350
TV Studio	1	1000	1000
TV Control	1	600	600
Audio Room	1	120	120
TV Editing	1	120	120
Engineering Directors Office	1	120	120
Electronics Support	1	150	150
Electronics/Optics Maintenance	1	600	600
Graphics	1	800	800
Film Processing	1	250	250
Film Printing	1	150	150
Copy Camera	1	160	160
Copy Room	1	150	150
Media Viewing	1	150	150
Conference	1	350	350
Media Storage	1	150	150
Equipment Storage	1	575	575
General Storage	1	300	300
Men	1	25	25
Women	1	25	25
			6625

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
3.	Resource Center/Library			
	Reading Room	1	4000	4000
	Charge Desk	1	100	100
	Duplication	1	80	80
	Processing	1	200	200
	Librarians Office	1	150	150
	General Office	1	360	360
	Media Storage	1	800	800
	Group Study	3	120	360
	Autotutorials	1	2000	2000
	General Storage	1	500	500
	Multi-Media Seminar Conference	1	500	500
				9550
4.	Fourth Year Multidiscipline Laboratory			
	Multidisciplinary Laboratory (35)	1	5000	5000
	MDL Support Laboratory	1	1500	1500
	MDL Special Support Laboratory	3	150	450
	MDL Preparation Room	1	200	200
	MDL Animal Room	1	500	500
	MDL Incubator	1	150	150
	MDL Cold Room	1	500	500
	MDL Educational Aids Storage	1	400	400
	Student Locker Rooms, Female	1	350	350
	Student Locker Rooms, Male	1	350	350
	Supervisors Office	1	120	120
	Lecture/Demonstration Room (40)	1	1000	1000
				10520
5.	Fifth Year Multidisciplinary Laboratory			
	Multidisciplinary Lab (74)	1	8800	8800
	MDL Preparation Room	1	240	240
	MDL Animal Room	1	500	500
	MDL Cold Room	1	120	120
	MDL Incubator	1	120	120
	Supervisors Office	1	120	120
	Lecture/Demonstration Room (74)	1	2400	2400
	Student Locker Room, Female	1	500	500
	Student Locker Room, Male	1	500	500
				13300
6.	Sixth Year Multidisciplinary Laboratory			
	Multidisciplinary Laboratory (74)	1	8800	8800
	MDL Preparation Room	1	240	240
	MDL Animal Room	2	320	640

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
6. Sixth Year Multidisciplinar Laboratory (contd)			
MDL Cold Room	1	120	120
MDL Incubator	1	400	400
Supervisors Office	1	120	120
			10320
7. MDL Support			
Maceration Room	1	400	400
Educational Aids Workshop	1	400	400
Volatiles Storage	1	120	120
General Storage	1	300	300
MDL Directors Office	1	120	120
Secretary	1	120	120
			1460
8. Support Services			
Receiving	1	360	360
Purchasing	1	240	240
General Stores	1	2500	2500
Special Storage	1	600	600
Mail Room	1	320	320
Materials Handling	1	3000	3000
Chief Engineer	1	120	120
Secretary	1	120	120
Maintenance	1	600	600
			7860
9. Hospital Administration/Support			
Reception	1	120	120
Cashier	1	240	240
Records	1	360	360
Business Office	1	180	180
Office Manager	1	120	120
Hospital Administration	1	150	150
Secretary/Waiting	1	150	150
Central Control	1	240	240
Men-Staff	1	180	180
Women-Staff	1	180	180
Commons	1	300	300
Locker Room-House Staff, Men	1	360	360
Locker Room-House Staff, Women	1	360	360
Student Intern Quarters	2	120	240
Shower-Toilet	2	70	140
			3320

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
10.	Clinics, Small Animal			
	Waiting	1	400	400
	Men	1	180	180
	Women	1	180	180
	Exam/Treatment	5	144	720
	Emergency Treatment	1	500	500
	Records and Monitoring Station	1	200	200
	Equipment Storage	1	180	180
	Seminar Conference	1	300	300
				2510
11.	Wards, Small Animal			
	Physiotherapy	2	200	400
	Wards (11 ea. avg.)	8	200	1600
	Ward Runs	4	450	1800
	Ward Utility Rooms	4	120	480
	Intensive Care	1	460	460
	Ward Exam/Treatment	4	320	1280
	Special Ward	2	120	240
	Ward Storage	2	120	240
	Cage Storage	1	200	200
	Isolation Rooms	8	100	800
	Isolation Room Vestibules	8	80	640
				8140
12.	Clinics, Large Animal			
	Waiting	1	200	200
	Records and Monitoring Station	1	200	200
	Men	1	150	150
	Women	1	150	150
	Consultation	1	120	120
	Scales	1	180	180
	Cart Storage	1	200	200
	Conference-Seminar	1	300	300
	Cast Room-Large Animal	1	400	400
	Minor O.R.-Large Animal	1	400	400
	Exam Treatment-Food Animal (2 station)	1	680	680
	Exam Treatment-Equine (2 station)	1	680	680
	Exam Treatment-Food Animal (1 station)	1	400	400
	Exam Treatment-Equine (1 station)	1	400	400
	Holding Pen	4	100	400
	Sorting Area and Working Chutes	1	1000	1000
				5710

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
13.	Wards, Food Animal			
	Treatment Area	1	600	600
	Stalls	6	144	864
	Stalls	8	270	2160
	Special Care Stalls/Receiving	4	270	1080
	Equipment Storage	1	240	240
	Hay-Feed Storage	1	360	360
	Tackroom	1	150	150
	Trash and Waste Collection	1	300	300
				5754
14.	Wards, Equine			
	Ambulation	1	800	800
	Stalls	30	144	4320
	Special Care Stalls	6	144	864
	Farriery	1	375	375
	Hay-Feed-Storage	1	360	360
	Tackroom	1	150	150
	Trash Collection	1	300	300
	Equipment Storage	1	240	240
				7409
15.	Core Facilities, Surgery			
	Operating Room, Large Animal	1	500	500
	Special Procedure O.R., Large Animal	1	500	500
	Monitoring	1	150	150
	Induction Room, Large Animal	2	160	320
	Operating Room, Small Animal	2	250	500
	Operating Room-Small Animal-non-sterile	1	250	250
	Special Procedure O.R., Small Animal	1	300	300
	Monitoring Room	1	150	150
	Induction, Small Animal	2	320	640
	Recovery, Small Animal	1	320	320
	Nurses Station	1	150	150
	Class Seminar/Conference	1	225	225
	Anesthesia Workroom	1	250	250
	Anesthesiologists Office	1	120	120
	Residents Office	4	80	320
	Dictation	1	100	100
	Scrub Areas	6	50	300
	Mens Lockers/Gowning	1	375	375
	Womens Lockers/Gowning	1	375	375
	Sterile Supply	1	600	600
				6545

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
16.	Core Facilities, Radiology			
	Radiology, Small Animal	1	240	240
	Radiology Special Procedures, S.A.	1	280	280
	Control/Monitor Room	1	120	120
	Radiology, Large Animal	1	750	750
	Radiology Special Procedures, L.A.	1	750	750
	Control/Monitor Room	1	150	150
	Holding	1	144	144
	Darkroom	1	160	160
	Evaluation	1	150	150
	Interpretation	1	150	150
	Records	1	400	400
	Reception	1	100	100
	Technician	1	120	120
	Residents	2	80	160
	Tank Storage	1	12	12
	Isotope Room	1	300	300
	Hot Lab	1	40	40
	Student Radiograph Review	1	450	450
	Radiologists Office	1	150	150
				4626
17.	Core Facilities, Pharmacy			
	Dispensing	1	500	500
	Receiving/Storage	1	250	250
	Medical Order Review	1	250	250
	Pharmacists Office	1	150	150
	Library/Pharmacopae	1	140	140
				1290
18.	Core Facilities Special Medicine			
	Special Procedure Room, S.A.	4	180	720
	Special Procedure Room, L.A.	2	575	1150
	Laboratory/Instrument Room	6	200	1320
	Seminar/Conference	1	300	300
	Offices	4	120	480
	Residents	4	100	400
				4370
19.	Field Services (May be located elsewhere in Nebraska than UN-L campus)			
	Vehicle Storage	2	280	560
	Breakdown Area	1	120	120
	Equipment Room	1	120	120

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
19.	Field Services (contd)			
	Processing Lab	1	80	80
	Mud Room	1	300	300
	Lockers, Male	1	200	200
	Lockers, Female	1	200	200
	F.S. Office	1	150	150
				1730
20.	Central Sterile Supply			
	Decontamination	1	400	400
	Equipment Processing	1	250	250
	Surgical Processing	1	500	500
	Laundry	1	175	175
	Linen Processing	1	250	250
	Clean Assembly	1	400	400
	Lockers, Male	1	130	130
	Lockers, Female	1	130	130
	Storage	1	200	200
				2435
21.	Teaching Surgery			
	Student Surgery	1	1800	1800
	Scrub	1	480	480
	Induction/Prep, L.A.	1	150	150
	Induction/Prep, S.A.	1	480	480
	Equipment Storage	1	200	200
	Student Lockers/Male	1	400	400
	Student Lockers/Female	1	400	400
	Teaching Animal Wards/Runs	2	575	1150
	Exam/Treatment	2	320	640
	Physiotherapy	1	200	200
	Residents	2	100	200
	Animal Receiving	1	150	150
	Supervisors Office	1	120	120
	Bulk Food Storage	1	250	250
	Animal Receiving Preparation/Exam	1	300	300
				6920
22.	Faculty Office/Research Center (Facilities to be added to existing)			
	Faculty Offices	48	120	5760
	Secretary	12	150	1800
	Conference	2	200	400
	Men	1	180	180
	Women	1	180	180
	Research Lab Module	24	360	8640

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
22.	Faculty Office/Research Center (contd)			
	Isotope Lab	1	260	260
	Chromatography Lab	1	180	180
	Cold Room	2	150	300
	Central Equipment	1	600	600
	Dark Room	1	120	120
	General Storage	2	200	400
	Research Equipment Workshop	1	300	300
	Post Graduate Offices	8	100	800
				19920
23.	Diagnostic Services (Facilities to be added to existing)			
	Clinical Pathology	1	400	400
	Clinical Pathology Equipment Room	1	240	240
	Clinical Pathologists Office	1	150	150
	Demonstration Necropsy	1	675	675
	Automated Chemistry	1	280	280
	Student Diagnostic Lab	1	2000	2000
				3627
24.	Student Facilities			
	Student Organization Office	1	150	150
	Student Commons	1	2000	2000
	Storage	1	120	120
				2270
	TOTAL FACILITIES AT UN-L			148,486

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN I - MODIFIED WAMI (Cole) Plan

Cost Item \ Location	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	14,410	15,860	12,910	148,486	191,666
Gross Area S.F.	21,615	23,790	19,365	246,453	311,223
Construction Cost**	$1,621,125	$1,784,250	$1,452,375	$18,483,975	$23,341,725
Sitework	75,000	75,000	75,000	250,000	475,000
Total Construction	$1,696,125	$1,859,250	$1,527,375	$18,733,975	$23,816,725
A/E Fees***	$110,248	$120,850	$100,000	$1,218,000	$1,549,098
Equipment & Furnishings	$215,000	$225,000	$185,000	$2,900,000	$3,525,000
Project Capital Cost	$2,021,373	$2,205,100	$1,812,375	$22,851,975	$28,890,823

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%

**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs

***Estimated Average 6½% Fee

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

PROGRAM OF FACILITIES	PLAN II: STUDY TEAM PLAN		
Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
A. Facilities Located at NORTH DAKOTA STATE UNIVERSITY, Fargo, North Dakota			
1. Educational Resources Center			
4th Year Multidisciplinary Laboratory (24)	1	2500	2500
MDL Support Laboratory	1	1000	1000
MDL Special Support Laboratory	2	150	300
MDL Preparation Room	1	180	180
MDL Animal Room	1	400	400
MDL Incubator	1	120	120
MDL Cold Room	1	400	400
MDL Educational Aids Storage	1	200	200
Student Locker Rooms, Female	1	225	225
Student Locker Rooms, Male	1	225	225
Volatiles Storage	1	100	100
General Storage	1	180	180
MDL Supervisors Office	1	120	120
Resources Center/Library	1	1400	1400
Autotutorial/AV Center	1	950	950
Seminar Rooms	1	300	300
			8,300
2. Faculty Office/Research Center			
Center Director's Office	1	150	150
Faculty Offices	3	120	360
Secretarial Office (3)	1	350	350
Post Graduate Offices	2	100	200
Duplicating/Storage	1	120	120
Commons	1	240	240
Research Laboratories	3	360	1080
Isotope Lab	1	180	180
Chromatography Lab	1	120	120
Cold Room	1	120	120
Central Equipment	1	400	400
Darkroom	1	80	80
Central Processing	1	300	300
General Storage	1	200	200
Animal Rooms	2	360	720
Continuing Education Office	1	150	150
Men	1	150	150
Women	1	150	150
Secretary	1	120	120
			5,190

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F. S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2,330
TOTAL FACILITIES AT NDSU			15,820
B. Facilities Located at UNIVERSITY OF WYOMING, Laramie, Wyoming			
1. Educational Resources Center			
4th Year Multidisciplinary Laboratory (30)	1	4000	4000
MDL Support Laboratory	1	1200	1200
MDL Special Support Laboratory	3	150	450
MDL Preparation Room	1	200	200
MDL Animal Room	1	450	450
MDL Incubator	1	150	150
MDL Cold Room	1	450	450
MDL Educational Aids Storage	1	200	200
Student Locker Room, Female	1	325	325
Student Locker Room, Male	1	325	325
Volatiles Storage	1	100	100
General Storage	1	200	200
MDL Supervisor Office	1	120	120
Lecture/Demonstration (40)	1	1000	1000
Demonstration Preparation	1	150	150
Resources Center/Library	1	1600	1600
Autotutorial/AV Center	1	1000	1000
Seminar Rooms	3	250	750
			12,670
2. Faculty Office/Research Center			
Center Director's Office	1	150	150
Faculty Offices	3	120	360
Secretarial Office (3)	1	350	350
Post Graduate Offices	2	100	200
Duplicating/Storage	1	120	120
Commons	1	240	240
Research Laboratories	3	360	1080
Isotope Lab	1	180	180

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
2. Faculty Office/Research Center (contd.)			
Chromatography Lab	1	120	120
Cold Room	1	120	120
Central Equipment	1	400	400
Darkroom	1	80	80
Central Processing	1	300	300
General Storage	1	200	200
Animal Rooms	2	360	720
Continuing Education Office	1	150	150
Secretary	1	120	120
Men	1	150	150
Women	1	150	150
			5,190
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F. S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2,330
TOTAL FACILITIES AT UW			20,190
C. Facilities Located at SOUTH DAKOTA STATE UNIVERSITY, Brookings, South Dakota			
1. Educational Resources Center			
4th Year Multidisciplinary Lab (24)	1	2500	2500
MDL Support Laboratory	1	1000	1000
MDL Special Support Laboratory	2	150	300
MDL Preparation Room	1	180	180
MDL Animal Room	1	400	400
MDL Incubator	1	120	120
MDL Cold Room	1	400	400
MDL Educational Aids Storage	1	200	200
Student Locker Room, Female	1	225	225
Student Locker Room, Male	1	225	225
Volatiles Storage	1	100	100
General Storage	1	180	180
MDL Supervisors Office	1	120	120
Autotutorial/AV Center	1	950	950
			6,900

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
2. Faculty Office/Research Center			
Center Director's Office	1	150	150
Faculty Offices	3	120	360
Secretarial Office (2)	1	350	350
Post Graduate Offices	2	100	200
Duplicating/Storage	1	120	120
Commons	1	240	240
Research Laboratories	3	360	1080
Isotope Lab	1	180	180
Chromatography Lab	1	120	120
Cold Room	1	120	120
Central Equipment	1	400	400
Darkroom	1	80	80
Central Processing	1	300	300
General Storage	1	200	200
Animal Rooms	2	360	720
Continuing Education Office	1	150	150
Men	1	150	150
Women	1	150	150
Secretary	1	120	120
			5,190
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F. S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2,330
TOTAL FACILITIES AT SDSU			14,420
D. Facilities Located at UNIVERSITY OF NEBRASKA, Lincoln, Nebraska			
1. Administration			
Office of the Dean	1	280	280
Associate Dean	1	250	250
Conference	1	375	375
Secretary/Waiting	1	400	400
Business Manager	1	140	150
Secretary/Waiting	1	150	150
Records	1	500	500

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
1.	Administration (contd.)			
	Storage	1	120	120
	Men	1	25	25
	Women	1	25	25
				2,275
2.	Educational Resources and Continuing Education Center			
	Director's Office	1	120	120
	Media Coordinator	1	120	120
	Secretary/Waiting	1	240	240
	Study Cubicles and Carrels	1	350	350
	TV Studio	1	1000	1000
	TV Control	1	600	600
	Audio Room	1	120	120
	TV Editing	1	120	120
	Engineering Director's Office	1	120	120
	Electronics Support	1	150	150
	Electronics/Optics Maintenance	1	600	600
	Graphics	1	800	800
	Film Processing	1	250	250
	Film Printing	1	150	150
	Copy Camera	1	160	160
	Copy Room	1	150	150
	Media Viewing	1	150	150
	Conference	1	350	350
	Media Storage	1	150	150
	Equipment Storage	1	575	575
	General Storage	1	300	300
	Men	1	25	25
	Women	1	25	25
				6,625
3.	Resource Center/Library			
	Reading Room	1	4000	4000
	Charge Desk	1	100	100
	Duplication	1	80	80
	Processing	1	200	200
	Librarian's Office	1	150	150
	General Office	1	360	360
	Media Storage	1	800	800
	Group Study	3	120	360
	Autotutorial	1	2000	2000
	General Storage	1	500	500
	Multi-Media Seminar Conference	1	500	500
				9,550

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
4. Fourth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (64)	1	8000	8000
MDL Support Laboratory	1	2000	2000
MDL Special Support Laboratory	3	180	540
MDL Preparation Room	1	220	220
MDL Animal Room	1	700	700
MDL Incubator	1	150	150
MDL Cold Room	1	700	700
MDL Educational Aids Storage	1	400	400
Student Locker Rooms, Female	1	450	450
Student Locker Rooms, Male	1	450	450
Supervisor's Office	1	120	120
Lecture/Demonstration Room (64)	1	2200	2200
			15,930
5. Fifth Year Multidisciplinary Laboratory			
Multidisciplinary Lab (74)	1	8800	8800
MDL Preparation Room	1	240	240
MDL Animal Room	1	500	500
MDL Cold Room	1	120	120
MDL Incubator	1	120	120
Supervisor's Office	1	120	120
Lecture/Demonstration Room (74)	1	2400	2400
Student Locker Room, Female	1	500	500
Student Locker Room, Male	1	500	500
			13,300
6. Sixth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Preparation Room	1	240	240
MDL Animal Rooms	2	320	640
MDL Cold Room	1	120	120
MDL Incubator	1	400	400
Supervisor's Office	1	120	120
			10,320
7. MDL Support			
Maceration Room	1	400	400
Educational Aids Workshop	1	400	400
Volatiles Storage	1	120	120
General Storage	1	300	300
MDL Director's Office	1	120	120
Secretary	1	120	120
			1,460

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
8.	Support Services			
	Receiving	1	360	360
	Purchasing	1	240	240
	General Stores	1	2500	2500
	Special Storage	1	600	600
	Mail Room	1	320	320
	Materials Handling	1	3000	3000
	Maintenance Shop	1	600	600
	Chief Engineer	1	120	120
	Secretary	1	120	120
				7,860
9.	Hospital Administration/Support			
	Reception	1	120	120
	Cashier	1	240	240
	Records	1	360	360
	Business Office	1	180	180
	Office Manager	1	120	120
	Hospital Administration	1	150	150
	Secretary/Waiting	1	150	150
	Central Control	1	240	240
	Men--Staff	1	180	180
	Women--Staff	1	180	180
	Commons	1	300	300
	Locker Room--House Staff, Men	1	360	360
	Locker Room--House Staff, Women	1	360	360
	Student-Intern Quarters	2	120	240
	Shower-Toilet	2	70	140
				3,320
10.	Clinics, Small Animal			
	Men	1	180	180
	Women	1	180	180
	Waiting	1	400	400
	Exam-Treatment	5	144	720
	Emergency Treatment	1	500	500
	Records and Monitoring Station	1	200	200
	Equipment Storage	1	180	180
	Seminar Conference	1	300	300
				2,510
11.	Wards, Small Animal			
	Physiotherapy	2	200	400
	Wards (11 ea. avg.)	8	200	1600
	Warn Runs	4	450	1800
	Intensive Care	1	460	460
	Ward Exam/Treatment	4	320	1280
	Ward Utility Room	4	120	480
	Special Ward	2	120	240
	Ward Storage	2	120	240

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
11. Wards, Small Animal (contd.)			
Cage Storage	1	200	200
Isolation Rooms	8	100	800
Isolation Room Vestibules	8	80	640
			8,140
12. Clinics, Large Animal			
Waiting	1	200	200
Records and Monitoring Station	1	200	200
Men	1	150	150
Women	1	150	150
Consultation	1	120	120
Scales	1	180	180
Cart Storage	1	200	200
Conference	1	300	300
Cast Room, Large Animal	1	400	400
Minor O.R., Large Animal	1	400	400
Exam/Treatment-Food Animal (2 Station)	1	680	680
Exam/Treatment-Equine (2 Station)	1	680	680
Exam/Treatment-Food Animal (1 Station)	1	400	400
Exam/Treatment-Equine (1 Station)	1	400	400
Holding Pen	4	100	400
Sorting Area and Working Chutes	1	1000	1000
			5,710
13. Wards, Food Animal			
Treatment Area	1	600	600
Stalls	6	144	864
Stalls	8	270	2160
Special Care Stalls	4	270	1080
Equipment Storage	1	240	240
Hay-Feed Storage	1	360	360
Tackroom	1	150	150
Trash and Waste Collection	1	300	300
			5,754
14. Wards, Equine			
Ambulation	1	800	800
Stalls	30	144	4320
Special Care Stalls	6	144	864
Farriery	1	375	375
Hay-Feed Storage	1	360	360
Tackroom	1	150	150
Trash Collection	1	300	300
Equipment Storage	1	240	240
			7,409

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
15.	Core Facilities, Surgery			
	Operating Room, Large Animal	1	500	500
	Special Procedure O.R., Large Animal	1	500	500
	Monitoring Room	1	150	150
	Induction Room, Large Animal	2	160	320
	Operating Room, Small Animal	2	250	500
	Operating Room, Small Animal (non-sterile)	1	250	250
	Special Procedure O.R., Small Animal	1	300	300
	Monitoring Room	1	150	150
	Induction, Small Animal	2	320	640
	Recovery, Small Animal	1	320	320
	Nurse's Station	1	150	150
	Class Seminar/Conference	1	225	225
	Anesthesia Workroom	1	250	250
	Anesthesiologist's Office	1	120	120
	Residents' Office	4	80	320
	Dictation	1	100	100
	Scrub Areas	6	50	300
	Men's Lockers/Gowning	1	375	375
	Women's Lockers/Gowning	1	375	375
	Sterile Supply	1	600	600
				6,545
16.	Core Facilities, Radiology			
	Radiology, Small Animal	1	240	240
	Radiology Special Procedures, S.A.	1	280	280
	Control/Monitor Room	1	120	120
	Radiology, Large Animal	1	750	750
	Radiology Special Procedures, L.A.	1	750	750
	Control/Monitor Room	1	150	150
	Holding	1	144	144
	Darkroom	1	160	160
	Evaluation	1	150	150
	Interpretation	1	150	150
	Records	1	400	400
	Reception	1	100	100
	Technicians	1	120	120
	Residents	2	80	160
	Tank Storage	1	12	12
	Isotope Room	1	300	300
	Hot Lab	1	40	40
	Student Radiograph Review	1	450	450
	Radiologist's Office	1	150	150
				4,626

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
17. Core Facilities, Pharmacy			
Dispensing	1	500	500
Receiving/Storage	1	250	250
Medical Order Review	1	250	250
Pharmacist's Office	1	150	150
Library/Pharmacopae	1	140	140
			1,290
18. Core Facilities, Special Medicine			
Special Procedure Room, Small Animal	4	180	720
Special Procedure Room, Large Animal	2	575	1150
Laboratory/Instrument Room	6	220	1320
Seminar/Conference	1	300	300
Offices	4	120	480
Residents	4	100	400
			4,370
19. Field Services (May be located elsewhere in Nebraska than UN-L campus)			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Processing Lab	1	80	80
Mud Room	1	300	300
Lockers, Male	1	200	200
Lockers, Female	1	200	200
F.S. Office	1	150	150
			1,730
20. Central Sterile Supply			
Decontamination	1	400	400
Equipment Processing	1	250	250
Surgical Processing	1	500	500
Laundry	1	175	175
Linen Processing	1	250	250
Clean Assembly	1	400	400
Lockers, Male	1	130	130
Lockers, Female	1	130	130
Storage	1	200	200
			2,435
21. Teaching Surgery			
Student Surgery	1	1800	1800
Scrub	1	480	480
Induction/Prep, Large Animal	1	150	150
Induction/Prep, Small Animal	1	480	480
Equipment Storage	1	200	200
Student Lockers, Male	1	400	400
Student Lockers, Female	1	400	400
Teaching Animal Wards/Runs	2	575	1150

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
21.	Teaching Surgery (contd.)			
	Exam/Treatment	2	320	640
	Physiotherapy	1	200	200
	Residents	2	100	200
	Animal Receiving	1	150	150
	Supervisor's Office	1	120	120
	Bulk Food Storage	1	250	250
	Animal Receiving Preparation/Exam	1	300	300
				6,920
22.	Faculty Office/Research Center (Facilities to be added to existing)			
	Faculty Offices	48	120	5760
	Secretary	12	150	1800
	Conference	2	200	400
	Men	1	180	180
	Women	1	180	180
	Research Lab Module	24	360	8640
	Isotope Lab	1	260	260
	Chromatography Lab	1	180	180
	Cold Room	2	150	300
	Central Equipment	1	600	600
	Darkroom	1	120	120
	General Storage	2	200	400
	Research Equipment Workshop	1	300	300
	Post Graduate Offices	8	100	800
				19,920
23.	Diagnostic Services (Facilities to be added to existing)			
	Clinical Pathology	1	400	400
	Clinical Pathology Equipment Room	1	240	240
	Clinical Pathologist's Office	1	150	150
	Demonstration Necropsy	1	675	675
	Automated Chemistry	1	280	280
	Student Diagnostic Lab	1	2000	2000
				3,627
24.	Student Facilities			
	Student Organization Office	1	150	150
	Student Commons	1	2000	2000
	Storage	1	120	120
				2,270
	TOTAL FACILITIES AT UN-L			152,436

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN II - STUDY TEAM PLAN

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	16,120	20,190	14,420	152,436	203,166
Gross Area S.F.	24,180	30,285	21,630	253,043	329,138
Construction Cost**	$1,813,500	$2,271,375	$1,622,250	$18,978,225	$24,685,350
Sitework	100,000	160,000	100,000	250,000	610,000
Total Construction	$1,913,500	$2,431,375	$1,722,250	$19,228,225	$25,295,350
A/E Fees***	$125,000	$158,000	$105,000	$1,250,000	$1,638,000
Equipment & Furnishings	$220,000	$275,000	$200,000	$3,000,000	$3,695,000
Project Capital Cost	$2,258,500	$2,864,375	$2,027,250	$23,478,225	$30,628,350

*Net to Gross Factor - Predominantly Lab/Education Facilitis = 66%
- Predominantly Animal Research = 60%

**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs

***Estimated Average 6½% Fee

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

PROGRAM OF FACILITIES

Plan III A: SINGLE CAMPUS REGIONAL SCHOOL IN NEBRASKA WITH GUARANTEED CONTRACTS TO OTHER STATES

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
A. Facilities Located at NORTH DAKOTA STATE UNIVERSITY, Fargo, North Dakota			
1. Educational Resources Center			
Resource Center/Library	1	1200	1200
Autotutorial/AV Center	1	750	750
Seminar Rooms	1	300	300
			2250
2. Office Center			
Continuing Education Office	1	150	150
Secretary	1	120	120
Duplicating/Storage	1	120	120
			390
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F.S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2330
TOTAL FACILITIES AT NDSU			4,970
B. Facilities Located at UNIVERSITY OF WYOMING, Laramie, Wyoming			
1. Educational Resources Center			
Lecture/Demonstration (40)	1	1000	1000

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
1. Educational Resources Center (contd)			
Demonstration Preparation	1	150	150
Resource Center/Library	1	1200	1200
Autotutoria/AV Center	1	750	750
Seminar Rooms	2	300	600
			3700
2. Office Center			
Continuing Education	1	150	150
Secretary	1	120	120
Duplicating/Storage	1	120	120
			390
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F.S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2330
TOTAL FACILITIES AT UW			6,420
C. Facilities Located at SOUTH DAKOTA STATE UNIVERSITY, Brookings, South Dakota			
1. Educational Resources Center			
Autotutorial/AV Center	1	750	750
			750
2. Office Center			
Continuing Education Office	1	150	150
Secretary	1	120	120
Duplicating/Storage	1	120	120
			390

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
3. Field Services			
Vehicle Storage	2	280	560
Breakdown Area	1	120	120
Equipment Room	1	120	120
Medicine Room	1	80	80
Processing Lab	1	80	80
Mud Room/Lockers	1	300	300
F.S. Office	1	150	150
Student Call Rooms	6	80	480
Study Room	1	180	180
Bath	2	70	140
Kitchenette	1	120	120
			2330
TOTAL FACILITIES AT SDSU			3,470
D. Facilities Located at UNIVERSITY OF NEBRASKA, Lincoln, Nebraska			
1. Administration			
Office of the Dean	1	280	280
Associate Dean	1	250	250
Conference	1	375	375
Secretary/Waiting	1	400	400
Business Manager	1	150	150
Secretary/Waiting	1	150	150
Records	1	500	500
Storage	1	120	120
Men	1	25	25
Women	1	25	25
			2275
2. Educational Resources and Continuing Education Center			
Director's Office	1	120	120
Media Coordinator	1	120	120
Secretary/Waiting	1	240	240
Study Cubicles & Carrels	1	350	350
TV Studio	1	1000	1000
TV Control	1	600	600
Audio Room	1	120	120
TV Editing	1	120	120
Engineering Directors Office	1	120	120
Electronics Support	1	150	150
Electronics/Optics Maintenance	1	600	600
Graphics	1	800	800
Film Processing	1	250	250
Film Printing	1	150	150

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
2. Educational Resources and Continuing Education Center (contd)			
Copy Camcera	1	160	160
Copy Room	1	150	150
Media Viewing	1	150	150
Conference	1	350	350
Media Storage	1	150	150
Equipment Storage	1	575	575
General Storage	1	300	300
Men	1	25	25
Women	1	25	25
			6625
3. Resource Center/Library			
Reading Room	1	4000	4000
Charge Desk	1	100	100
Duplication	1	80	80
Processing	1	200	200
Librarians Office	1	150	150
General Office	1	360	360
Media Storage	1	800	800
Group Study	3	120	360
Autotutorial	1	2000	2000
General Storage	1	500	500
Multi-Media Seminar Conference	1	500	500
			9550
4. Fourth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Support Laboratory	1	2000	2000
MDL Special Support Laboratory	3	180	540
MDL Preparation Room	1	240	240
MDL Animal Room	1	700	700
MDL Incubator	1	150	150
MDL Cold Room	1	750	750
MDL Educational Aids Storage	1	400	400
Student Locker Rooms, Female	1	500	500
Student Locker Rooms, Male	1	500	500
Supervisors Office	1	120	120
Lecture/Demonstration Room (74)	1	2400	2400
			17100
5. Fifth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Preparation Room	1	240	240
MDL Animal Room	1	500	500
MDL Cold Room	1	120	120
MDL Incubator	1	120	120
Supervisors Office	1	120	120

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
5.	Fifth Year Multidisciplinary Laboratory (contd)			
	Lecture/Demonstration Room (74)	1	2400	2400
	Student Locker Room, Female	1	500	500
	Student Locker Room, Male	1	500	500
				13300
6.	Sixth Year Multidisciplinary Laboratory			
	Multidisciplinary Laboratory (74)	1	8800	8800
	MDL Preparation Room	1	240	240
	MDL Animal Room	2	320	640
	MDL Cold Room	1	120	120
	MDL Incubator	1	400	400
	Supervisors Office	1	120	120
				10320
7.	MDL Support			
	Maceration Room	1	400	400
	Educational Aids Workshop	1	400	400
	Volatiles Storage	1	120	120
	General Storage	1	300	300
	MDL Directors Office	1	120	120
	Secretary	1	120	120
				1460
8.	Support Services			
	Receiving	1	360	360
	Purchasing	1	240	240
	General Stores	1	2500	2500
	Special Storage	1	600	600
	Mail Room	1	320	320
	Materials Handling	1	3000	3000
	Chief Engineer	1	120	120
	Secretary	1	120	120
	Maintenance Shop	1	600	600
				7860
9.	Hospital Administration/Support			
	Reception	1	120	120
	Cashier	1	240	240
	Records	1	360	360
	Business Office	1	180	180
	Office Manager	1	120	120
	Hospital Administration	1	150	150
	Secretary/Waiting	1	150	150

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
9.	Hospital Administration/Support (contd)			
	Central Control	1	240	240
	Men-Staff	1	180	180
	Women-Staff	1	180	180
	Commons	1	300	300
	Locker Room-House Staff, Men	1	360	360
	Locker Room-House Staff, Women	1	360	360
	Student Intern Quarters	2	120	240
	Shower-Toilet	2	70	140
				3320
10.	Clinics, Small Animal			
	Men	1	180	180
	Women	1	180	180
	Waiting	1	400	400
	Exam/Treatment	5	144	720
	Emergency Treatment	1	500	500
	Records & Monitoring Station	1	200	200
	Equipment Storage	1	180	180
	Seminar Conference	1	150	150
				2510
11.	Wards, Small Animal			
	Physiotherapy	2	200	400
	Wards (11 ea. avg.)	8	200	1600
	Ward Runs	4	450	1800
	Ward Utility Rooms	4	120	480
	Intensive Care Ward	1	460	460
	Ward Exam/Treatment	4	320	1280
	Surgical Ward	2	120	240
	Ward Storage	2	120	240
	Cage Storage	1	200	200
	Isolation Rooms	8	100	800
	Isolation Room Vestibules	8	80	640
				8140
12.	Clinics, Large Animal			
	Waiting	1	200	200
	Records & Monitoring Station	1	200	200
	Men	1	150	150
	Women	1	150	150
	Consultation	1	120	120
	Scales	1	180	180
	Cart Storage	1	200	200
	Conference	1	150	150

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
12.	Clinics, Large Animal (contd)			
	Cast Room-Large Animal	1	400	400
	Minor O.R.-Large Animal	1	400	400
	Exam/Treatment-Food Animal (1 station)	1	680	680
	Exam/Treatment-Equine (2 station)	1	680	680
	Exam/Treatment-Food Animal (1 station)	1	400	400
	Exam Treatment-Equine (1 station)	1	400	400
	Holding Pen	4	100	400
	Sorting Area & Working Chutes	1	1000	1000
				5710
13.	Wards, Food Animal			
	Treatment Area	1	600	600
	Stalls	6	144	864
	Stalls	8	270	2160
	Special Care Stalls	4	270	1080
	Equipment Storage	1	240	240
	Hay-Feed Storage	1	360	360
	Tackroom	1	150	150
	Trash & Waste Collection	1	300	300
				5754
14.	Wards, Equine			
	Ambulation	1	800	800
	Stalls	30	144	4320
	Special Care Stalls	6	144	864
	Farriery	1	375	375
	Hay-Feed Storage	1	360	360
	Tackroom	1	150	150
	Equipment Storage	1	240	240
	Trash Collection	1	300	300
				7409
15.	Care Facilities, Surgery			
	Operating Room, Large Animal	1	500	500
	Special Procedure O.R., Large Animal	1	500	500
	Monitoring Room	1	150	150
	Induction Room, Large Animal	2	160	320
	Operating Room, Small Animal	2	250	500
	Operating Room-Small Animal-non-sterile	1	250	250
	Special Procedure O.R., Small Animal	1	300	300
	Monitoring Room	1	150	150
	Induction, Small Animal	2	320	640
	Recovery, Small Animal	1	320	320
	Nurses Station	1	150	150

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
15.	Care Facilities, Surgery (contd)			
	Class Seminar/Conference	1	225	225
	Anesthesia Workroom	1	250	250
	Anesthesiologists Office	1	120	120
	Residents Office	4	80	320
	Scrub Areas	6	50	300
	Mens Lockers/Gowning	1	375	375
	Womens Lockers/Gowning	1	375	375
	Sterile Supply	1	600	600
	Dictation	1	100	100
				6545
16.	Core Facilities, Radiology			
	Radiology, Small Animal	1	240	240
	Radiology Special Procedures, S.A.	1	280	280
	Control/Monitor Room	1	120	120
	Radiology, Large Animal	1	750	750
	Radiology Special Procedures, L.A.	1	750	750
	Control/Monitor Room	1	150	150
	Holding	1	144	144
	Darkroom	1	160	160
	Evaluation	1	150	150
	Interpretation	1	150	150
	Records	1	400	400
	Reception	1	100	100
	Technicians	1	120	120
	Residents	2	80	160
	Tank Storage	1	12	12
	Isotope Room	1	300	300
	Hot Lab	1	40	40
	Student Radiograph Review	1	450	450
	Radiologists Office	1	150	150
				4626
17.	Core Facilities, Pharmacy			
	Dispensing	1	500	500
	Receiving/Storage	1	250	250
	Medical Order Review	1	250	250
	Pharmacists Office	1	150	150
	Library/Pharmacopae	1	140	140
				1290
18.	Core Facilities, Special Medicine			
	Special Procedure Room, Small Animal	4	180	720
	Special Procedure Room, Large Animal	2	575	1150

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
18.	Core Facilities, Special Medicine (contd)			
	Laboratory/Instrument Room	6	220	1320
	Seminar/Conference	1	300	300
	Offices	4	120	480
	Residents	4	100	400
				4370
19.	Field Services (May be located elsewhere in Nebraska than UN-L campus)			
	Vehicle Storage	2	280	560
	Breakdown Area	1	120	120
	Equipment Room	1	120	120
	Processing Lab	1	80	80
	Mud/Room	1	300	300
	Lockers, Male	1	200	200
	Lockers, Female	1	200	200
	F.S. Office	1	150	150
				1730
20.	Central Sterile Supply			
	Decontamination	1	400	400
	Equipment Processing	1	250	250
	Surgical Processing	1	500	500
	Laundry	1	175	175
	Linen Processing	1	250	250
	Clean Assembly	1	400	400
	Lockers, Male	1	130	130
	Lockers, Female	1	130	130
	Storage	1	200	200
				2435
21.	Teaching Surgery			
	Student Surgery	1	1800	1800
	Scrub	1	480	480
	Induction/Prep, Large Animal	1	150	150
	Induction/Prep, Small Animal	1	480	480
	Equipment Storage	1	200	200
	Student Lockers/Male	1	400	400
	Student Lockers/Female	1	400	400
	Teaching Animal Wards/Runs	2	575	1150
	Exam/Treatment	2	320	640
	Physiotherapy	1	200	200
	Residents	2	100	200
	Animal Receiving	1	150	150
	Supervisors Office	1	120	120
	Bulk Food Storage	1	250	250
	Animal Receiving Preparation/Exam	1	300	300
				6920

	Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
22.	Faculty Office/Research Center (Facilities added to existing)			
	Faculty Offices	60	120	7200
	Secretary	15	250	2250
	Conference	2	200	400
	Men	1	200	200
	Women	1	200	200
	Research Lab Module	30	360	10800
	Isotope Lab	1	260	260
	Chromatography Lab	1	180	180
	Cold Room	2	150	300
	Central Equipment	1	600	600
	Darkroom	1	120	120
	General Storage	2	200	400
	Research Equipment Workshop	1	300	300
	Post Graduate Offices	8	100	800
				24,010
23.	Diagnostic Services (Facilities to be added to existing)			
	Clinical Pathology	1	400	400
	Clinical Pathology Equipment Room	1	240	240
	Clinical Pathology Office	1	150	150
	Demonstration Necropsy	1	675	675
	Autotutorial Chemistry	1	280	280
	Student Diagnostic Lab	1	2000	2000
				3627
24.	Student Facilities			
	Student Organization Office	1	150	150
	Student Commons	1	2000	2000
	Storage	1	120	120
				2270
	TOTAL FACILITIES AT UN-L			159,156

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN III A - SINGLE CAMPUS REGIONAL SCHOOL AT NEBRASKA

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	4,970	6,420	3,470	159,156	174,016
Gross Area S.F.	7,455	9,630	5,205	264,198	286,488
Construction Cost**	$559,125	$722,250	$390,375	$19,814,850	$21,486,600
Sitework	60,000	60,000	50,000	250,000	420,000
Total Construction	$619,125	$782,250	$440,375	$20,064,850	$21,906,600
A/E Fees***	$40,300	$50,800	$29,000	$1,304,000	$1,424,100
Equipment & Furnishings	$80,000	$95,000	$60,000	$3,100,000	$3,335,000
Project	$739,425	$928,050	$529,375	$24,468,850	$26,665,700

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%

**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs

***Estimated Average 6½% Fee

PROGRAM OF FACILITIES

PLAN IIIB: FREE-STANDING NEBRASKA SCHOOL WITH GUARANTEED CONTRACTS TO OTHER STATES

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
D. Facilities Located at UNIVERSITY OF NEBRASKA, Lincoln, Nebraska			
1. Administration			
Office of the Dean	1	280	280
Associate Dean	1	250	250
Conference	1	375	375
Secretary/Waiting	1	400	400
Business Manager	1	150	150
Secretary/Waiting	1	150	150
Records	1	500	500
Storage	1	120	120
Men	1	25	25
Women	1	25	25
			2,275
2. Educational Resources and Continuing Education Center			
Director's Office	1	120	120
Media Coordinator	1	120	120
Secretary/Waiting	1	240	240
Study Cubicles and Carrels	1	350	350
TV Studio	1	1000	1000
TV Control	1	600	600
Audio Room	1	120	120
TV Editing	1	120	120
Engineering Director's Office	1	120	120
Electronics Support	1	150	150
Electronics/Optics Maintenance	1	600	600
Graphics	1	800	800
Film Processing	1	250	250
Film Printing	1	150	150
Copy Camera	1	160	160
Copy Room	1	150	150
Media Viewing	1	150	150
Conference	1	350	350
Media Storage	1	150	150
Equipment Storage	1	575	575
General Storage	1	300	300
Men	1	25	25
Women	1	25	25
			6,625

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
3. Resource Center/Library			
Reading Room	1	4000	4000
Charge Desk	1	100	100
Duplication	1	80	80
Processing	1	200	200
Librarian's Office	1	150	150
General Office	1	360	360
Media Storage	1	800	800
Group Study	3	120	360
Autotutorial	1	2000	2000
General Storage	1	500	500
Multi-Media Seminar Conference	1	500	500
			9,550
4. Fourth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Support Laboratory	1	2000	2000
MDL Special Support Laboratory	3	180	540
MDL Preparation Room	1	240	240
MDL Animal Room	1	700	700
MDL Incubator	1	150	150
MDL Cold Room	1	750	750
MDL Educational Aids Storage	1	400	400
Student Locker Rooms, Female	1	500	500
Student Locker Rooms, Male	1	500	500
Supervisor's Office	1	120	120
Lecture/Demonstration Room (74)	1	2400	2400
			17,100
5. Fifth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Preparation Room	1	240	240
MDL Animal Room	1	500	500
MDL Cold Room	1	120	120
MDL Incubator	1	120	120
Supervisor's Office	1	120	120
Lecture/Demonstration Room (74)	1	2400	2400
Student Locker Room, Female	1	500	500
Student Locker Room, Male	1	500	500
			13,300
6. Sixth Year Multidisciplinary Laboratory			
Multidisciplinary Laboratory (74)	1	8800	8800
MDL Preparation Room	1	240	240
MDL Animal Room	2	320	640
MDL Cold Room	1	120	120
MDL Incubator	1	400	400
Supervisor's Office	1	120	120
			10,320

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
7.	MDL Support			
	Maceration Room	1	400	400
	Educational Aids Workshop	1	400	400
	Volatiles Storage	1	120	120
	General Storage	1	300	300
	MDL Director's Office	1	120	120
	Secretary	1	120	120
				1,460
8.	Support Services			
	Receiving	1	360	360
	Purchasing	1	240	240
	General Stores	1	2500	2500
	Special Stores	1	600	600
	Mail Room	1	320	320
	Materials Handling	1	3000	3000
	Chief Engineer	1	120	120
	Secretary	1	120	120
	Maintenance Shop	1	600	600
				7,860
9.	Hospital Administration/Support			
	Reception	1	120	120
	Cashier	1	240	240
	Records	1	360	360
	Business Office	1	180	180
	Office Manager	1	120	120
	Hospital Administration	1	150	150
	Secretary/Waiting	1	150	150
	Central Control	1	240	240
	Men, Staff	1	180	180
	Women, Staff	1	180	180
	Commons	1	300	300
	Locker Room-House Staff, Men	1	360	360
	Locker Room-House Staff, Women	1	360	360
	Student Intern Quarters	2	120	240
	Shower/Toilet	2	70	140
				3,320
10.	Clinics, Small Animal			
	Men	1	180	180
	Women	1	180	180
	Waiting	1	400	400
	Exam/Treatment	5	144	720
	Emergency Treatment	1	500	500
	Records and Monitoring Station	1	200	200
	Equipment Storage	1	180	180
	Seminar Conference	1	150	150
				2,510

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
11. Wards, Small Animal			
Physiotherapy	2	200	400
Wards (11 ea. avg.)	8	200	1600
Ward Runs	4	450	1800
Ward Utility Rooms	4	120	480
Intensive Care Ward	1	460	460
Ward Exam/Treatment	4	320	1280
Surgical Ward	2	120	240
Ward Storage	2	120	240
Cage Storage	1	200	200
Isolation Rooms	8	100	800
Isolation Room Vestibules	8	80	640
			8,140
12. Clinics, Large Animal			
Waiting	1	200	200
Records and Monitoring Station	1	200	200
Men	1	150	150
Women	1	150	150
Consultation	1	120	120
Scales	1	180	180
Cart Storage	1	200	200
Conference	1	150	150
Cast Room, Large Animal	1	400	400
Minor O.R., Large Animal	1	400	400
Exam/Treatment, Food Animal (1 Station)	1	680	680
Exam/Treatment, Equine (2 Station)	1	680	680
Exam/Treatment, Food Animal (1 Station)	1	400	400
Exam/Treatment, Equine (1 Station)	1	400	400
Holding Pen	4	100	400
Sorting Area and Working Chutes	1	1000	1000
			5,710
13. Wards, Food Animal			
Treatment Area	1	600	600
Stalls	6	144	864
Stalls	8	270	2160
Special Care Stalls	4	270	1080
Equipment Storage	1	240	240
Hay-Feed Storage	1	360	360
Tackroom	1	150	150
Trash and Waste Collection	1	300	300
			5,754
14. Wards, Equine			
Ambulation	1	800	800
Stalls	30	144	4320
Special Care Stalls	6	144	864
Farriery	1	375	375
Hay-Feed Storage	1	360	360

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
14.	Wards, Equine (contd.)			
	Tackroom	1	150	150
	Equipment Storage	1	240	240
	Trash Collection	1	300	300
				7,409
15.	Care Facilities, Surgery			
	Operating Room, Large Animal	1	500	500
	Special Procedure O.R., Large Animal	1	500	500
	Monitoring Room	1	150	150
	Induction Room, Large Animal	2	160	320
	Operating Room, Small Animal	2	250	500
	Operating Room, Small Animal (Non-sterile)	1	250	250
	Special Procedure O.R., Small Animal	1	300	300
	Monitoring Room	1	150	150
	Induction, Small Animal	2	320	640
	Recovery, Small Animal	1	320	320
	Nurse's Station	1	150	150
	Class Seminar/Conference	1	225	225
	Anesthesia Workroom	1	250	250
	Anesthesiologist's Office	1	120	120
	Residents' Office	4	80	320
	Scrub Areas	6	50	300
	Men's Lockers/Gowning	1	375	375
	Women's Lockers/Gowning	1	375	375
	Sterile Supply	1	600	600
	Dictation	1	100	100
				6,545
16.	Core Facilities, Radiology			
	Radiology, Small Animal	1	240	240
	Radiology Special Procedures, S.A.	1	280	280
	Control/Monitor Room	1	120	120
	Radiology, Large Animal	1	750	750
	Radiology Special Procedures, L.A.	1	750	750
	Control/Monitor Room	1	150	150
	Holding	1	144	144
	Darkroom	1	160	160
	Evaluation	1	150	150
	Interpretation	1	150	150
	Records	1	400	400
	Reception	1	100	100
	Technicians	1	120	120
	Residents	2	80	160
	Tank Storage	1	12	12
	Isotope Room	1	300	300
	Hot Lab	1	40	40
	Student Radiograph Review	1	450	450
	Radiologist's Office	1	150	150
				4,626

Space		No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
17.	Core Facilities, Pharmacy			
	Dispensing	1	500	500
	Receiving/Storage	1	250	250
	Medical Order Review	1	250	250
	Pharmacist's Office	1	150	150
	Library/Pharmacopae	1	140	140
				1,290
18.	Core Facilities, Special Medicine			
	Special Procedure Room, Small Animal	4	180	720
	Special Procedure Room, Large Animal	2	575	1150
	Laboratory/Instrument Room	6	220	1320
	Seminar/Conference	1	300	300
	Offices	4	120	480
	Residents	4	100	400
				4,370
19.	Field Services (May be located elsewhere in Nebraska than UN-L campus)			
	Vehicle Storage	2	280	560
	Breakdown Area	1	120	120
	Equipment Room	1	120	120
	Processing Lab	1	80	80
	Mud Room	1	300	300
	Lockers, Male	1	200	200
	Lockers, Female	1	200	200
	F. S. Office	1	150	150
				1,730
20.	Central Sterile Supply			
	Decontamination	1	400	400
	Equipment Processing	1	250	250
	Surgical Processing	1	500	500
	Laundry	1	175	175
	Linen Processing	1	250	250
	Clean Assembly	1	400	400
	Lockers, Male	1	130	130
	Lockers, Female	1	130	130
	Storage	1	200	200
				2,435
21.	Teaching Surgery			
	Student Surgery	1	1800	1800
	Scrub	1	480	480
	Induction/Prep, Large Animal	1	150	150
	Induction/Prep, Small Animal	1	480	480
	Equipment Storage	1	200	200
	Student Lockers, Male	1	400	400
	Student Lockers, Female	1	400	400
	Teaching Animal Wards/Runs	2	575	1150

Space	No. Reqd.	No. Sq. Ft. Each	Total Sq. Ft.
21. Teaching Surgery (contd.)			
Exam/Treatment	2	320	640
Physiotherapy	1	200	200
Residents	2	100	200
Animal Receiving	1	150	150
Supervisor's Office	1	120	120
Bulk Food Storage	1	250	250
Animal Receiving Preparation/Exam	1	300	300
			6,920
22. Faculty Office/Research Center (Facilities added to existing)			
Faculty Offices	60	120	7200
Secretary	15	150	2250
Conference	2	200	400
Men	1	200	200
Women	1	200	200
Research Lab Module	30	360	10,800
Isotope Lab	1	260	260
Chromatography Lab	1	180	180
Cold Room	2	150	300
Central Equipment	1	600	600
Darkroom	1	120	120
General Storage	2	200	400
Research Equipment Workshop	1	300	300
Post Graduate Offices	8	100	800
			24,010
23. Diagnostic Services (Facilities to be added to existing)			
Clinical Pathology	1	400	400
Clinical Pathology Equipment Room	1	240	240
Clinical Pathology Office	1	150	150
Demonstration Necropsy	1	675	675
Autotutorial Chemistry	1	280	280
Student Diagnostic Lab	1	2000	2000
			3,627
24. Student Facilities			
Student Organization Office	1	150	150
Student Commons	1	2000	2000
Storage	1	120	120
			2,270
TOTAL FACILITIES AT UN-L			159,156

OLD WEST REGIONAL COLLEGE OF VETERINARY MEDICINE

ESTIMATE OF CAPITAL COSTS

PLAN III B - FREE-STANDING NEBRASKA SCHOOL

Location / Cost Item	North Dakota State University Fargo, North Dakota	University of Wyoming Laramie, Wyoming	South Dakota State University Brookings, South Dakota	University of Nebraska Lincoln, Nebraska	Total
Net Area S.F.*	0	0	0	159,156	159,156
Gross Area S.F.	0	0	0	264,198	264,198
Construction Cost***	0	0	0	$19,814,850	$19,814,850
Sitework	0	0	0	250,000	250,000
Total Construction	0	0	0	$20,064,850	$21,906,600
A/E Fees***	0	0	0	$1,304,000	$1,304,000
Equipment & Furnishings	0	0	0	$3,100,000	$3,100,000
Project Capital Cost	0	0	0	$24,468,850	$24,468,850

*Net to Gross Factor - Predominantly Lab/Education Facilities = 66%
- Predominantly Animal/Research = 60%

**Unit Cost - $75.00/Sq. Ft. Average - 1977 Costs

***Estimated Average 6½% Fee